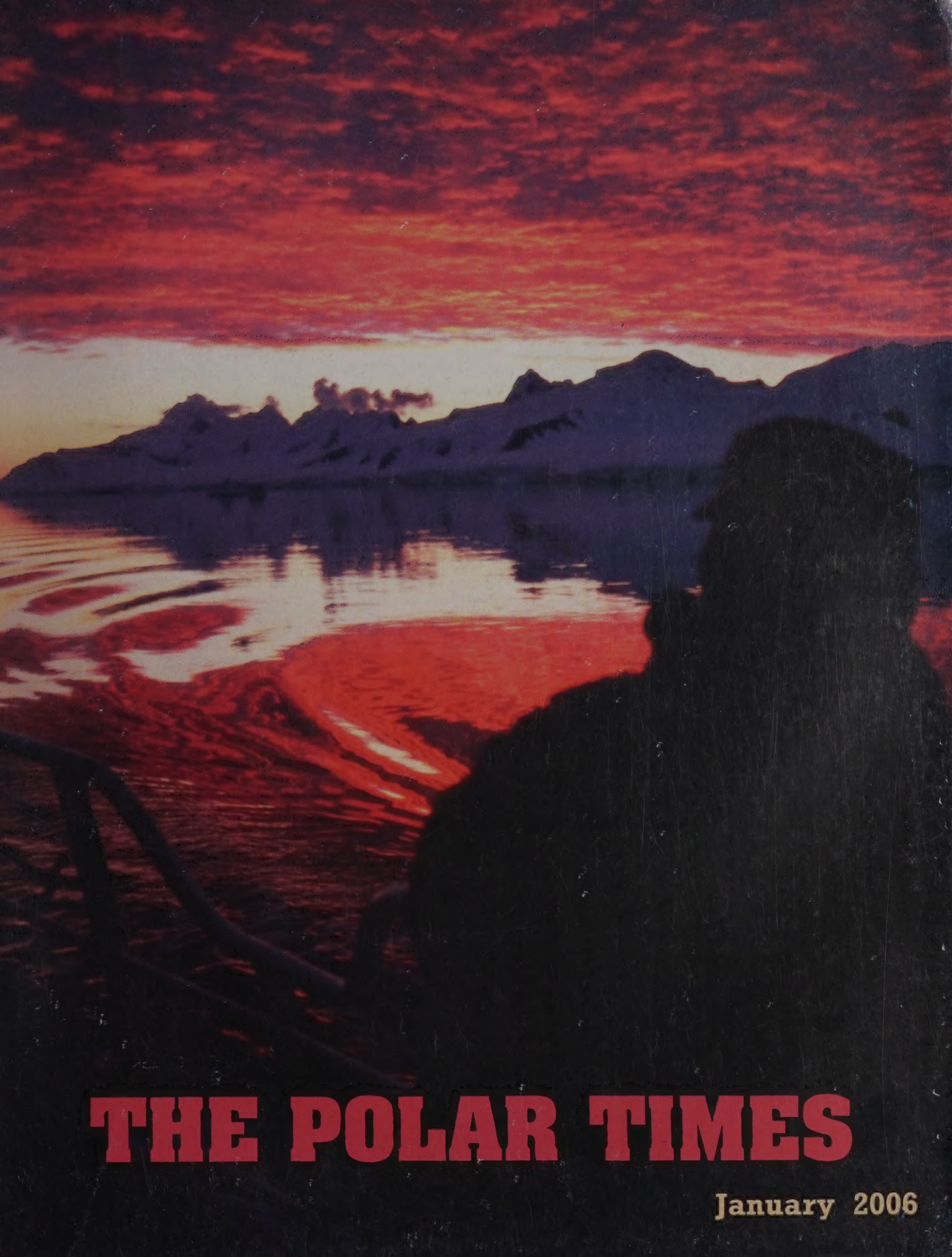


THE POLAR TIMES

January 2006

'March of the Penguins' Maker Talks

iafrica.com, **31 October 2005, CAPE TOWN, by Maria Lorente**—Film director Luc Jacquet set out to depict penguins' lonely journey across icy wastelands to find a mate but ended up touching a common nerve of love and fragility in people across the world.

The birds' human-like stoicism during their treacherous annual mating ritual transformed a small wildlife documentary, "March of the Penguins," into a surprise international hit and the most successful French film in US history, Jacquet said in an interview.

"The film touches on a universal emotion," Jacquet said in a hotel in Los Angeles where he was promoting the DVD release of his film, which topped the North American box office for weeks earlier this year.

But it was not the human themes of love and loneliness that Jacquet set out to capture when he headed to freezing Antarctica to document the birds' annual mating pilgrimage. It was the battle of the species to survive against all odds that fascinated him.

"What is most important for me is the extreme fragility of the emperor penguin. That's the story I wanted to tell. The penguins make this incredible journey, and then everything can fall to pieces in an instant," he said.

"There are only a few dozen places where he can lay eggs, he does this in the most stable environment he can and finds himself walking for miles upon miles in the blizzards of Antarctica just to lay one egg. The emperor penguin lives his life on the edge," he explained.

"Adapt or leave" — and the emperor stayed.

The film, which is being discussed in Hollywood as a potential Oscar contender, tells the story of the penguins' 90km trek across the snowy continent in search of a mate.

The immense popularity of the movie, in which many Americans and audiences in other parts of the world see a metaphor for aspects of their own lives, has taken the former biologist by surprise.

"I could never have imagined such a success," the director said of the movie that was filmed on land and in water in inhospitable Antarctica over a 13-month period.

The film opened in North America with virtually no publicity and showing in only a few locations, but its surprise success prompted distributor Warner Independent to soon expand it onto nearly 700 screens.

The $3.4-million film has raked in more than $76-million in the United States and Canada alone, creating a new reputation for its maker.

"A year and a half ago, this film was practically dead," Jacquet said. There was no more money, people weren't being paid and we couldn't get anyone to finance it," he recalled.

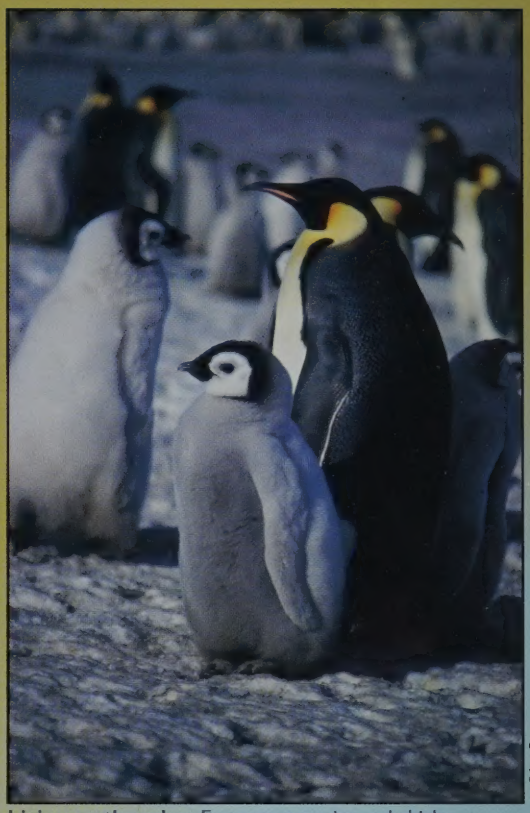
Jacquet's fascination with the black-and-white-clad emperor penguin began when he first visited Antarctica on a scientific expedition in 1992. During the trip, the young biologist switched careers and became a filmmaker.

"I realised that what I wanted to do was tell people the story of what I had seen. That's why I decided to change careers," he said.

In 2000, long after he returned to France, he began writing a documentary about the only inhabitants of the icy continent, the emperor penguins, the largest of their species, weighing around 30kg.

"It was the best story, but I kept it until I was professional enough," he said of his film, which is narrated by actor Morgan Freeman in English.

He returned to Antarctica in 2003 with a three-person team to capture the birds' entire life cycle over the year. The penguins were not afraid of the men who came to film them.



Living on the edge: Emperor penguins and chicks

Conditions during filming were very tough. Temperatures plunged to minus 40 degrees, and winds blew at speeds of up to 300km/h.

"It was difficult," he said. But Jacquet was captivated by his subject and its surroundings, saying he made the film for those who love penguins as much as he does and want to protect them.

He plans to make more films about animals now that he has proved himself to producers and is disbelieving but tantalised by the possibility of winning an Academy Award for his first feature-length film.

"An Oscar? That would be a dream. When you come from so far, an Oscar seems impossible. I still can't believe this whole thing," he said. ❑

About Our Cover

"SUNSET SILHOUETTE"—Enjoying the twilight along the Antarctic Peninsula aboard a tour vessel. © Jeff Rubin *(Jeff Rubin, our Polar Times Antarctic editor, has contributed a number of photos to this issue of the magazine, including those of the Emperor penguins shown on this page.)*

The President's Letter

According to the Constitution of the American Polar Society, my two-year term as president has elapsed, and I am now in a lame duck position (well, lame, anyway). Time has passed quickly, and a move has been made to issue a ballot of candidates, one of whom will succeed me in that office.

Since the day the previous president, Dr. Gisela Dreschhoff, called to ask if I would be willing to include my name in the ballot for President, much has happened.

The Polar Times, a tribute to the initiative and foresight of our editors and production editor, has taken on a new and attractive appearance, with the introduction of color, more book reviews and more feature articles by staff and members. A surplus of excellent books we felt should be reviewed for our members even required a special insert in the January 2005 issue. All this has been done without an increase in member dues, which takes some wizardry but also means that eventually we will have to bite the bullet as a result of increasing printing and postage expenses. For the moment, membership is doing well, as you will see elsewhere in this issue, but dues alone are inadequate to maintain a healthy Society, especially when a Symposium comes along, so we appreciate your interest and support in thinking of 2006 as a time to be generous and add something extra to your dues statement or to send a little extra in a separate mailing. The Society, as stated in our journal, is a tax-exempt organization.

An American Polar Society book series was started, kicked off with Dr. Martin Pomerantz's book, *Astronomy on Ice*. We encourage all members to do the same with their diaries and journals. *(See the review in the Jan. 2005 issue for further information on getting started.)*

Two Society positions—Membership Chair and Secretary—have been succeeded, as you have noticed by reading recent issues.

Plans are also under way for a Society Symposium, which I originally hoped to schedule in 2006. But it now seems better fitted for 2007 and the onset of the 2007-2008 International Polar Year, which will provide an appropriate theme for a symposium.

On a personal note, I would like to acknowledge a friend and colleague—who I'm sure does not really think about it in this way—for adding a sideline to my career as a geologist. We met at Ohio State University, when I was Associate Director of the Institute of Polar Studies (now the Byrd Polar Research Center, or BPRC) and spending the period 1967-1974 there before moving on to the University of Nebraska (1974-77) (which would be followed by 12 years at the University of Minnesota [1977-89] and then three years of teaching at the College of the Atlantic, Bar Harbor, Maine; but that's another story).

While sitting in my office at the University of Minnesota, I received a telephone call from a tour company in New York City and was asked if I would be interested in joining the staff as a lecturer on an Antarctic cruise in the 1983-84 austral summer. After a quick chat with my chairman to get approval, I told the caller I would be happy to participate in the cruise as a lecturer, something I had never done before; but I *had* spent seven summers in the field in Antarctica and could develop a list of lectures for the purpose.

That was the start of more than 100 cruises to Antarctica to date, whenever I haven't been teaching or meeting other duties. I was eventually employed by about a dozen different companies on many other ships, concentrating mainly in both polar regions but also in virtually all other parts of the world. Many of our Society members have been involved in this kind of program for some years as well.

It took a few questions of the first tour company to learn how my original opportunity came about. I learned that my colleague and mentor, Dr. Terence J. Hughes, had been a lecturer on the *Lindblad Explorer* for several austral seasons in Antarctica but had had a conflict between his teaching schedule and that year's cruise. He had recommended replacement lecturers the company might invite. I'm not sure if I was the first to be contacted, but I have been grateful to Terry ever since, and recently I repaid the "favor."

In a field camp in Antarctica near Darwin Glacier in the 1978-79 season, Terry worked out of the camp on a project on Byrd Glacier, and I was the NSF rep in the helicopter camp coordinating field activities. In January 1979, during a routine helicopter flight on the way to his field area, the pilot encountered the dreaded white-out conditions that make flying in a vat of milk seem easy. The helicopter crashed when the pilot thought he had more altitude then he did. The skids hit the snow at about 100 knots. The aircraft did cartwheels, landing upside down, placing people on the injury list, but all survived. Terry ended up hanging upside down in his seat belt and was evacuated shortly after and returned to the main camp.

I visited the crash site a day or so later and helped tidy up the place by bringing a half-meter section of the main rotor blade back to camp. I had that "souvenir" for many years until a few months ago when, in the midst of housekeeping, I asked Terry if he would like a memento of his narrow escape from "glaciologist heaven."

He now has that reminder of an interesting event in his life. I also want to say that Terry received the prestigious Goldthwait Polar Medal at a meeting at the BPRC in October 2005, which he well-deserves for a career of tracking glaciers in Antarctica and Greenland and making sense out of them. An interesting highlight of a Ph.D. degree in Materials Science, in which he knew more about the molecular structures of metals and alloys than about ice, but if you know Terry, he never thought twice about a switch in careers. ❑

John Splettstoesser

President, American Polar Society

American Polar Society

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $15 a year ($17, foreign) and entitle members to receive ***The Polar Times*** twice a year. The American Polar Society is classified as a tax exempt organization under Sec 501(C)3 of the IRS Code. For more information about the American Polar Society, contact Kevin L. Bjella, ***APS Secretary***, at 1.802.295.6881 or send email to kevin.bjella@erdc.usace.army.mil.

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The Deepest South: Antarctic Tourism Today

***Audubon*, July-August 2005, by Jeff Rubin**—Snow flies sideways as we tromp up the beach, the white flakes contrasting sharply with dark volcanic stones. We hear—and smell—the birds before we see them. Their raucous trilling mingles with a distinct barnyard perfume hanging in the air. Suddenly there they are, crowded together on a steep, rocky slope overlooking the iceberg-studded sound: 20,000 Adélies, the archetypal black-and-white penguin, tending to their downy gray chicks in the brief Antarctic summer, which lasts from December to February. Several hundred gentoo penguins, a closely related species with distinctive white patches above the eyes, coexist peacefully nearby, equally bent on bringing up their next generation.

We've spent three days on a ship to get here, paid many thousands of dollars, and suffered seasickness in lumpy seas, but this moment makes it all worthwhile. "It just absolutely takes my breath away," says Dick Weber, a retired schoolteacher from Coupeville, Wash. "Never in my life did I think I'd have the opportunity to walk around a group of penguins in the wild."

I've joined 118 tourists on a 12-day Antarctic cruise to report on the state of tourism in this icy paradise. We're aboard the *M.S. National Geographic Endeavour*, a comfortable, 295-foot-long ship operated by New York-based Lindblad Expeditions, a leading operator of tours to Antarctica, with an excellent environmental record. A three-hour stop to view penguins at Brown Bluff on the northeastern tip of the Antarctic Peninsula is our first shore landing, and each following day will bring us to new places and new wonders.

Tourists are cruising to the Deepest South in record numbers, drawn by Antarctica's isolation, teeming wildlife, and spectacular scenery of ice and mountains. Don't worry about the cold: Travelers visit only during the summer, and they stick almost exclusively to the Antarctic Peninsula, where the average summertime temperature is 32 degrees Fahrenheit, and doesn't dip much below 20 degrees. North Americans, who make up about 40 percent of Antarctic tourists, often return home to much chillier temperatures than they experience here. My home in northern Ohio, for example, regularly endures winter weather more frigid than summer on the Antarctic Peninsula.

Just six years ago a mere 9,857 tourists visited Antarctica. By contrast, during the most recent tourist season, about 23,000 tourists came ashore on Antarctica, and an additional 7,100 flew over or cruised by without setting foot on land. This influx is causing the nature of Antarctic tourism to change. In the past most Antarctic tour ships carried fewer than 150 passengers. Today among the fleet are giant ocean liners that can carry as many as 1,200. Tourists have long enjoyed the opportunity to watch wildlife after riding to shore in small inflatable boats called Zodiacs. Now they can also camp onshore, kayak alongside swimming penguins, scuba dive among icebergs, and mountain climb on peaks that have not even been named yet.

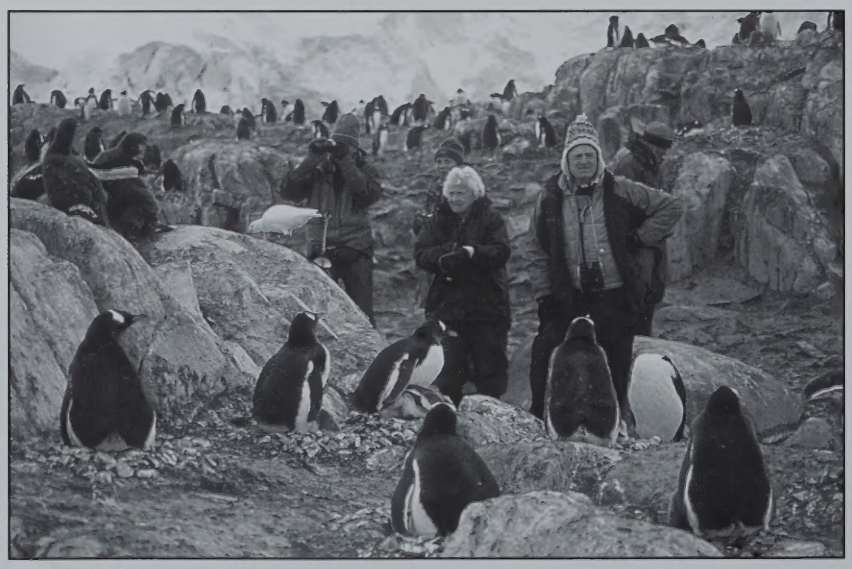
> *"It just absolutely takes my breath away."* — **Dick Weber**

So far there's no indication that such tourism has done the continent or its denizens any harm, unlike so many other ecotourism hot spots. Nevertheless, governments from a number of countries, including Australia, the United Kingdom, and the United States—and the tour industry itself—are thinking in earnest about ways to keep Antarctica as unspoiled as possible (see "Keeping the Ice Clean").

Although this is my 13th trip to Antarctica as a lecturer and guidebook author, I never tire of the experience. Antarctica feels exciting and different each time: the ever-changing light, the myriad forms of ice, the throngs of wildlife, the overwhelming sense of remoteness. As British explorer Ernest Shackleton put it, "The stark polar lands grip the hearts of the men who have lived on them in a manner which can hardly be understood by people who have never got outside the pale of civilization."

I always marvel at the beauty of the gigantic icebergs and ice shelves, found nowhere else on earth, that are sculpted into shapes both architectural and fantastic—Roman archways, medieval fortresses, sinuous works of abstract art. Walking in the snow-free Dry Valleys in the Ross Sea region feels like what I imagine it would be like to land on Mars: You see little except wind-eroded rocks and sand, with no apparent sign of life. By contrast, going to the emperor penguin rookeries of East Antarctica fills you with awe at the sheer vitality of these birds, which somehow have managed to raise their chicks through the extraterrestrial cold of the Antarctic winter.

I've listened to the crackle and hiss of air bubbles rising from beneath melting icebergs, been blasted by the frigid winds streaming off the polar plateau, seared my skin with plunges in 29°F seawater, and often been startled by the unexpectedly loud *fffffff!* of a minke



© Jeff Rubin

NEW LIMITS: Tourists watch nesting gentoo penguins at Cuverville Island, home of the largest gentoo colony in the Antarctic Peninsula. Under new Antarctic Treaty site guidelines for Cuverville and for Jougla Point on Wiencke Island, the total visit time by all ships in each 24-hour period is not to exceed eight hours ashore. For Penguin Island and the Aitcho Islands, the total visit time is not to exceed six hours ashore.

whale's fishy exhalation as it surfaced right alongside my Zodiac.

Antarctica is surprisingly variegated. Icebergs, for example, are not merely white but come in hues ranging from jade-green to deep indigo to yellow-brown and white—they can even be striped. Entire hillsides blush a watermelon pink, tinted by the snow algae growing atop snowfields. Lichens paint rocks a bright patchwork of yellow and orange. Moss beds glow emerald-green in the sun. And at this high latitude, slow-motion sunsets saturate the sky with ever more orange, scarlet, and rose as each hour passes.

Also on bold display is the red of Alfred Lord Tennyson's "tooth and claw" nature. Giant petrels thrust their heads and necks deep into the carcass of an elephant seal pup, emerging with their feathers matted in blood. A leopard seal seizes an unlucky juvenile penguin, on its first and final swim, and thrashes it out of its very skin. Skuas—large, gull-like birds—team up to play a lethal tug-of-war with struggling penguin chicks, using their sharp hooked beaks to rip them apart alive.

Most tourists come to Antarctica for the abundant wildlife, and they're not disappointed. The penguins, seals, whales, albatrosses, and other seabirds have little fear of humans, thanks to the care we take to avoid disturbing them. On our journey south across the Drake Passage, which separates Antarctica from South America, a variety of seabirds appear to emerge from thin air to follow *Endeavour*. Graceful wandering albatrosses soar on 11-foot wingspans. Flocks of mottled cape petrels flutter in the wind. Tiny storm petrels skitter over the waves as they feed on zooplankton, appearing to walk on water, like Saint Peter, after whom this bird is named.

Whales, though once slaughtered here by the hundreds of thousands, are now sighted nearly every day. Visitors glimpse humpbacks, minkes, orcas, fins, seis, and—once in a great while—a rare blue whale, possibly the largest creature that ever lived, weighing as much as 150 tons.

At Snow Hill Island, we tour a tiny wooden hut where six men from the Swedish South Polar Expedition of 1901–03 spent two years, the second one forced upon them by the wreck of their ship, *Antarctic*. Despite the important geographical discoveries made by this early expedition, it is best known for the amazing story of its members' survival, in three separated parties, on a diet of penguin and seal meat and penguin eggs. Behind the hut, the Peninsula's oldest remaining building, we wander up a snowless ravine, plucking fossils of clams and ammonites from the gravel to show to one another. But we pocket no souvenirs—not even a tiny penguin feather. To help keep Antarctica pristine, we take only photographs, and leave nothing behind—a guideline in place ever since the beginning of Antarctic tourism in 1966.

© Jeff Rubin

Tourists, including one clearly unaffected by the chilly Antarctic air, aim their cameras

To reach volcanic Deception Island's hidden inner harbor, created when the crater's wall was breached by the sea thousands of years ago, Captain Karl Lampe pilots *Endeavour* through the narrow break called Neptunes Bellows, just 200 yards wide. The passage is made even trickier by hull-piercing Ravn Rock, which lies in wait just eight feet beneath the surface in the middle of the channel, so we steer to starboard as we enter. We land at Whalers Bay on a lava-sand beach cloaked in sulfur-scented steam and hike through the ruins of a Norwegian whaling station that operated from 1912 to 1931. The volcano, which is active but dormant, last erupted in fury in 1969, triggering a mudslide that swept the whalers' cemetery out into the harbor and destroyed an adjacent British scientific station. Terrified station members barely escaped a hail of volcanic bombs by carrying pieces of corrugated iron over their heads.

At Hannah Point, on nearby Livingston Island, gentoo and chinstrap penguins feed their voracious chicks as elephant seals repose in a wallow during their weeks-long annual molt, their scabrous skins flaking off in ragged pieces. The ponderous, belching masses bring to mind a group of flatulent, drunken frat boys.

Under gray skies the next morning in aptly named Paradise Harbor, we take to tandem kayaks, wearing seawater-activated emergency beacons around our necks for safety. Glaciers spill down the flanks of the mountains girding the bay, but the water is flat calm. Penguins swim by, "porpoising" out of the water before diving deep. On several drifting icebergs, seals rest, unconcerned, as we paddle past.

(Continued on page 8)

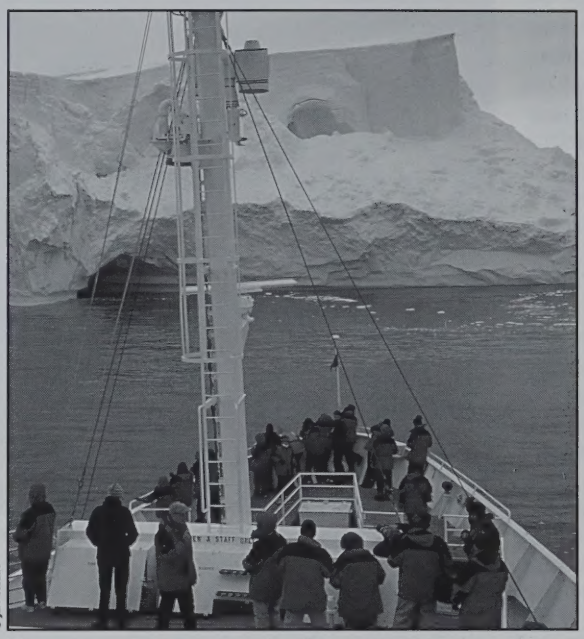
Nearly all Antarctica-bound ships depart from Ushuaia, on the Argentine side of Tierra del Fuego. Remember that smaller ships are generally better, both environmentally and experientially. While there are many good options for choosing a tour operator, the companies listed here—whose ships carry from 46 to 120 passengers—will provide a superior experience, including excellent naturalist leaders: Lindblad Expeditions (800-397-3348; www.expeditions.com); Audubon Nature Odysseys, led this year by Steve Kress, vice-president of bird conservation (800-967-7425, 212-979-3066, travel@audubon.org; http://travel.audubon.org); Aurora Expeditions (011-61-2-9252-1033; www.auroraexpeditions.com.au); Heritage Expeditions (011-64-3-365-3500; www.heritage-expeditions.com); Peregrine Expeditions (www.peregrine.net.au; websales@peregrine.net.au); and Quark Expeditions (800-356-5699; www.quarkexpeditions.com). For general information on traveling to Antarctica, contact the International Association of Antarctica Tour Operators (970-704-1047; www.iaato.org). ❑ J.R.

The Splendor of Antarctica Beckons

New Orleans Times-Picayune, **28 Aug 2005, HALF MOON ISLAND, by Millie Ball**—Signs proclaimed: "Penguins only beyond this point." We'd been told firmly to stay at least 15 feet away from them. But no one said we couldn't point our fingers and grin foolishly as we jabbed people next to us, urging them to "Look at that one!" Or focus our cameras and *click, click, click, click, click, click*. No wonder the penguins glanced at us.

Then it was as if they thought "Ho-hum, more human beings." And they resumed feeding their baby chicks, waddling back and forth with military precision, gazing toward the sea with what resembled boredom, sticking their beaks skyward to emit shrill cries of irritation at other penguins—road rage, Antarctica-style.

Hundreds of penguins under a blue sky streaked with wispy cirrus clouds. And in the background, icebergs shaped like giant abstract sculptures. I whispered to a friend, "I need to think of another word besides 'Wow!'"



© Jeff Rubin

New places and new wonders. Viewing icebergs from the bow of *M.S. National Geographic Endeavour* as it cruises off the northwest coast of the Antarctic Peninsula.

Most of the 32 ships that sail to the Antarctic Peninsula each December to March depart from the small tourist town of Ushuaia, where the weather was crisp and fall-like. Walking down the pier, I passed several smaller Antarctica-bound ships—including the *Europa*, a 94-year-old, tall-mast sailing ship—on my way to the 650-passenger *MV Discovery*, my home for the next week. (*Discovery* formerly was the *Island Princess*, stand-in ship for the *Pacific Princess*, "The Love Boat" of TV fame.)

By late the second day, the sea was calm again, and temps in the corridor outside my cabin had dropped 10 to 15 degrees. On deck, it was between the 20s and low 40s; the wind was fierce, and we pulled our parkas tightly.

Sometimes the wind and cold won, but other times we defied them, finding places in sunlight so we could stay and look at the overwhelming views.

Among the more startling sights were lengthy rectangular (tabular) icebergs, rising as high as 150 feet above the sea and as flat as tabletops, which is what they are commonly called. Icebergs of all shapes typically were frosted on the surface, while sides were a rich aquamarine or, no surprise, ice blue.

One evening, the sky was a storybook peach, pale and delicate as a little girl's organdy dress. Several of us braced ourselves on deck, unable to leave as we watched a new moon appear to dance among silhouetted mountain peaks as we sailed by.

The ship stopped outside Deception Island, a volcanic caldera with a deceptively small opening. Passengers on some ships go ashore, bathing suits under their parkas, and swim—sometimes naked—in a geothermal pool. We were content to watch from deck: "My God. There must be 100 or more penguins on those rocks!" someone near me gasped.

Our first landing was announced with short notice. We gathered into four "color groups," 100 in each, marking our landing order, and waited to be called to our Zodiacs—inflatable rubber boats that hold 12 people.

Only three Zodiacs had landed when a block of ice unexpectedly calved off a glacier and fell into the sea. Other chunks broke off, and the water was sucked out of the inlet. Penguins turned and wobbled as fast as they could inland. Under the guidance of the ship's staff, passengers returned to the Zodiacs, which easily puttered through the ice to the ship.

It didn't take long for bits of ice to surround the *Discovery*. The captain explained that the ship wasn't in danger, but needed to maneuver out of the ice field. "Whenever we go ashore, we have tarps, rations and emergency needs, just in case," said a staff member.

Our onboard lectures were led by Peter Carey, a 44-year-old New Zealander who runs the SubAntarctic Foundation for Ecosystems Research. How many visits? "Fifty three, on five different ships. It's a privilege to visit Antarctica, and with this comes responsibilities," said Carey, who's runner-fit and has red hair atop his ruddy face. "Wildlife always has the right of way," he said.

The most developed site we visited was Paradise Harbor, with a boardwalk leading to a simple, wooden Chilean station. A statue of the Virgin Mary holding the Christ child was halfway up in an arched grotto; below it, signposts pointed in all directions to cities all over the world.

On either side there were gentoo penguins. I became fixated on a mother feeding her chick. She leaned over while the chick arched his neck up and regurgitated into his mouth.

It was surprisingly warm on Paradise Harbor—maybe even in the high 40s or 50s—and several of us who had unzipped our parkas looked with envy at Carey as he bounded on land, wearing shorts and a T-shirt.

Right before we got on the Zodiacs, we sat on chairs so crew members could scrape the penguin poop and krill shells off the soles of our boots and wash them down.

Passengers to Antarctica have changed over the years, said Carey. Earlier visitors were nature buffs, who wanted to know everything and see all the birds they could. "Now people are generally younger, with lighter interests. But I still see people in tears when they see the penguin chicks."

Michael Birkett, a Brit in his 60s who's traveled all over the world and lived on six continents, spoke for a lot of us when he tried to describe his reactions to Antarctica. "The remoteness and expansiveness is…"

He hesitated, then said, "the word is hackneyed. But it is awe-inspiring. And it's cruel. It's harsh here, and starkly beautiful. The sheer amount of ice….Of all of my travel experiences, I'd probably put this at Number 1." ❑

EDITOR'S NOTE: This story has been edited from the original.

Keeping the Ice Clean

***Audubon*, July-August 2005, by Jeff Rubin**—In 1987, when I first visited Antarctica, it was unusual to see even one other vessel. Now, with more than 35 tour ships making 150 voyages to the Antarctic Peninsula each year, we see other ships often, and it's harder to maintain the sense of isolation.

Even so, Antarctica seems to be no worse for the wear, at least so far. Visitors are instructed not to smoke or leave litter behind on trips ashore or to take souvenirs—not even a stone from a pebble-covered beach. They must also stay at least five yards away from penguins, and further from more sensitive animals like fur seals and giant petrels. (The animals, however, are free to approach tourists—and often do, particularly if the visitors remain quiet and low to the ground.)

Nearly all Antarctic tourists sleep and eat aboard ships, so there are no hotels or restaurants operating in the delicate Antarctic environment, though a tent camp in the interior hosts a hundred or so mountaineers and trekkers each year. By comparison, more than 4,000 scientists and support staff live for months at a time at the continent's three dozen permanent stations, where they conduct a wide variety of research.

As more travelers visit Antarctica, tourism is coming under scrutiny by the 28 countries that regulate activities on the continent through the Antarctic Treaty System, the complex of arrangements that aims to ensure the continent remains devoid of international discord and that its ecosystems remain untarnished. "Tourism is now front and center," says Ray Arnaudo of the U.S. State Department, who heads the U.S. delegations to Antarctic Treaty meetings and is intimately involved with Antarctic affairs. "It's the big issue for the Antarctic Treaty System."

Several veteran expedition leaders fear that critical mass is near. Because everyone wants to go to the same choice locations, the 20 most-visited sites in Antarctica account for three-quarters of tourist landings.

Very large ships, a recent phenomenon in Antarctica, are another major concern. While some of these vessels do not take passengers ashore, they carry as many as 2,000 passengers and crew. Attempts to rescue them all in the case of an accident could be nightmarish.

> *"Antarctic tourism used to be run by people who loved the place and wanted to share it. Now, increasingly, there are operators to whom it's just another place to make a buck."*

The ships also burn heavy fuel that, if spilled, would be much more harmful to the environment than that used by smaller ships.

Another concern is an influx of new tour companies that are not only inexperienced in icy waters but also see Antarctica as no different than any other popular destination. "Antarctic tourism used to be run by people who loved the place and wanted to share it," says Maj De Poorter, a senior adviser to the environmental group Antarctic and Southern Ocean Coalition. "Now, increasingly, there are operators to whom it's just another place to make a buck."

There is a growing belief that the time is right for thoughtful regulation, before a major oil spill or another *Titanic*. Crafting it will be complicated, however, by the fact that no country owns Antarctica, and the 28 member countries of the Antarctic Treaty System work via consensus.

Tour companies, of course, have a unique interest in making sure that Antarctica stays unsullied. Despite being commercial competitors, they formed a trade group, the International Association of Antarctica Tour Operators (IAATO), in 1991 to promote responsible tourism. Once a small, close-knit club, it now has 78 members from 13 countries.

IAATO members agree to abide by guidelines that, among other things, allow only one ship at a time at a landing site; limit the number of passengers ashore to no more than 100; require at least one guide for every 20 passengers on land; and prohibit ships carrying more than 500 passengers from landing any passengers. In 2003, IAATO put new restrictions on ships carrying more than 200 passengers, placing 20 highly sensitive landing sites off-limits to them.

"What we can do most effectively in terms of managing tourism is to place limits on how the companies operate," says Denise Landau, IAATO's executive director. But because IAATO restrictions are only voluntary, many fret that stronger measures are needed. In fact three ships that each carry more than 500 passengers have declined to join IAATO. For this reason some experts say the best tool for minimizing Antarctic tourism's possible impacts will be site-specific requirements and limits with the force of the Antarctic Treaty behind them.

Governments, scientists, and tour companies depend on Antarctica remaining unspoiled. Although they all have an impact on the continent, they also have a stake in keeping it as natural as it was before they arrived. ❑

A privilege...with responsibilities. Passengers line the bows of the icebreaker *Kapitan Khlebnikov* as it pushes through close pack in the northern Ross Sea. (© Jeff Rubin)

New Guidelines for Tourism

by Jeff Rubin

For the first time ever, the Antarctic Treaty Parties have agreed to apply to site-specific guidelines to tourism in Antarctica—setting time limits for tourist visits at four frequently-visited sites on the Antarctic Peninsula.

At the XXVIII Antarctic Treaty Consultative Meeting (Stockholm, June 2005) the parties adopted a proposal from the United Kingdom, Australia and the United States, for visitor guidelines for Penguin Island, Aitcho Islands, Cuverville Island and Jougla Point, Wiencke Island.

> *For the first time ever, the Antarctic Treaty Parties have agreed to . . . guidelines to tourism in Antarctica*

For each site, the guidelines describe the sensitivity, features, wildlife and visitor pressure. They also set a visitor code of conduct, and include a detailed map. In addition, they limit landings to certain size ships and set daily time limits for the number of hours passengers can visit a site.

For Penguin Island (home of a large colony of breeding southern giant petrels and the site of the dormant 170m volcanic caldera of Deacon Peak) and for the Aitcho Islands (breeding gentoo and chinstrap penguins, nesting southern giant petrels, wallowing southern elephant seals) the total visit time per 24 hours, all ships included, is not to exceed six hours ashore.

The hours-ashore provision applies only to passenger ships, defined as vessels carrying more than 12 passengers. In addition, for both of these sites, landings are confined to vessels with a capacity of 200 or fewer passengers.

For Cuverville Island (home of the largest gentoo penguin colony in the Antarctic Peninsula) and for Jougla Point on Wiencke Island (nesting gentoos and blue-eyed shags), the total visit time per 24 hours, all ships included, is not to exceed eight hours ashore. In addition, for these two sites, landings are confined to vessels with a capacity of 500 or fewer passengers.

> *If they are seen to work well, the guidelines are likely to be applied soon to seven other popular sites on the Peninsula*

Although the guidelines are not mandatory, the Treaty Parties endorsed them as practical provisions to manage visitor-related pressures. If they are seen to work well, guidelines are likely to be applied soon to seven other popular sites on the Peninsula: Turret Point, Yankee Harbour, Hannah Point, Neko Harbor and Paulet, Pleneau, and Petermann islands. ❑

(CONTINUED FROM PAGE 5)

Back in the Zodiac an hour later, a group of us comes upon a humpback whale asleep on the surface, its blowhole agape. We kill the Zodiac's outboard and drift closer to the whale, a floating black island much larger than our boat. With raindrops dripping from the hoods of our jackets, we sit silently for a long while, savoring the serenity. Only when our driver restarts the engine does the whale slowly swim off.

Next we travel through the Lemaire Channel, and the cameras continue clicking. Nearly every tour vessel that cruises to Antarctica visits the passage, nicknamed Kodak Gap because of the vivid way the six miles of quiet water in this narrow, steep-sided channel reflects the mountains and glaciers towering above.

Beyond the channel's southern entrance, the pack ice thickens to "ten-tenths" density, meaning that it completely covers the sea. Weddell and crabeater seals slither from large ice floes as we push ahead. Captain Lampe eventually decides to reverse course, but not before several jokes about "spending the winter" circulate on the bridge.

We also get a rare look at some of the weird creatures that inhabit these cold seas, thanks to an opportunity offered only by Lindblad Expeditions. "Undersea specialist" David Cothran daily dons 120 pounds of scuba gear to brave the freezing seawater for a photographic fishing trip. Late one afternoon we gather in the lounge to view his bounty of digital video: feathery white crinoids, spindly sea spiders, brilliant yellow sponges.

Lindblad also contributes to science by carrying a team of researchers from the Oceanites' Antarctic Site Inventory on every Antarctic cruise. Since 1994 the project has been gathering biological data at dozens of potentially sensitive sites, providing an important database of information for nations working to develop guidelines for Antarctic tourism.

On our last day in Antarctica we visit Palmer Station, the smallest of three U.S. research bases on the continent, for a firsthand look at Antarctica's importance to science. While research at Palmer focuses on the marine ecosystem, atmospheric studies and climate change, scientists at other Antarctic stations are studying topics ranging from astronomy to geology.

At Torgersen Island, just offshore from the station, we meet researchers from Palmer studying a topic of immediate interest: Is tourism having an adverse effect on the Adélie penguins of Torgersen and nearby islands? The results of the 30-year study thus far indicate that "tourists are having no impacts on Adélie penguin populations," Bill Fraser, the principal investigator of the study, funded by the National Science Foundation, tells me later back in the States. Naturally, there are caveats, including the tiny number of visitors permitted to visit Torgersen compared with Antarctica's most popular sites. But Fraser isn't ready to say tourism is completely safe. "Although we're not seeing an impact [on the penguins]," he says, "it doesn't mean that an impact is not occurring." It might just be too early to tell.

Climate change, by comparison, has led to a drastic decline in local Adélie numbers. Sea ice, a critical winter habitat for the penguins, is diminishing, while increased snowfall covers nesting sites until very late in the breeding season. The Adelies' disappearance is alarmingly apparent when I survey Torgersen's once-teeming rookeries (see "On Thin Ice," Audubon, December 2003). During the past 30 years an area that formerly resounded with the braying of 5,000 breeding pairs has quieted to just 1,200 today. On neighboring Litchfield Island, the 1,000 pairs counted in 1974 have all but evaporated; only 10 remain.

As we make our way back across the Drake Passage toward home, we have plenty of time to contemplate our incredible journey. "Antarctica is such a visceral experience, embracing all the senses," says one of my fellow passengers, Mark Holly, an engineer from University City, Missouri. "It certainly will be with me forever." I know just what he means. ❑

Antarctica: Then and Now

by Michael Warr

The Antarctic Peninsula showed its white plateau with dark mountains rising from the sea and white glaciers calving, as it stretched south to the Antarctic mainland. Close in, icebergs shone, ice floes held up resting seals, penguins porpoised through the water, sea birds glided over the cold waves, and the occasional whale broke the surface.

Little seemed to have changed since I was last here as a meteorologist. But forty years ago I only saw two live whales, plus one dead 60-foot fin whale that was processed in thirty minutes at the Grytviken whaling station on South Georgia. In the 1960s, Signy Island, in the South Orkneys, had two hundred fur seals; now there are 20,000 of them on the few square miles of this island. On our 2005 *Polar Star* cruise, fur seals clogged several beaches, and they were even seen as far south as Marguerite Bay. And there were more than thirty whale sightings—minkes, sei, humpback, orcas, and one rare straptooth whale (seen by only four of us)—in three weeks.

Our 100-passenger cruise ship sailed from Ushuaia at the southern tip of Argentina. Half the passengers were ex-British Antarctic Survey men who, because of the dispute over the Falkland Islands in the 1960s, had not been allowed to land in Argentina. Many of the males still had beards, though there was a noticeable lack of hair on top; but bushy eyebrows made up for it. We felt young, though the personnel at the Marguerite Bay base of Rothera seemed to us to be too young to be in the Antarctic.

We enjoyed visiting the neat and cosy wooden huts at Horseshoe Island and Stonington Island even if they were no longer used. The small mica-windowed coal stoves, the seal meat hooks, the Nansen sledge parts, the rusty meat tins, and the narrow bunk beds brought back memories. But the bases had not been efficient.

Welsh coal had been shipped from Britain, and carried onto the bases in heavy sacks by each young Antarctic "explorer." Electricity and radio transmissions depended on limited supplies of diesel fuel. Communications home were limited to 100 words once a month, and 200 words incoming. Of course, often in the field, one could hear a base hundreds of miles away by radio, but not one's own base nearby.

The huskies, on steep glacial conditions, were the most efficient method of transportation. In the 1965-66 season, the two single-prop De Haviland Otters that supported the dog sledge teams were reduced to one. The pilot of one plane landed in white-out conditions and switched off the engine when the plane was still 30 feet off the ground. The fuselage is still visible on the glacier above the Adelaide Island base four decades later.

The huskies were culled as snow machines became more efficient, and more planes, primarily the Twin Otters, arrived. The last one dozen huskies were removed in 1994. They did not survive the transition to the Arctic. They had been born for too many generations in the Antarctic. Those who made the environmental rules considered them an alien species. Nowadays the increasing number of machines and people raises the Antarctic pollution levels. And you cannot keep warm on a snowmobile by running along side of it as you could with a sledge team, and huskies were always good listeners.

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Mind you, the present "keep Antarctica pristine" movement has some good points. We used to leave our garbage around the base or on the sea ice tidal crack. Today most human refuse is taken out of the Antarctic, and our messes of several decades ago are cleaned up.

Rothera is the only remaining all-season British scientific base on the Antarctic Peninsula. Only two cruise ships a year are allowed to disturb the biological, upper-atmosphere, geological, and glacial work. The base has a 900-metre crushed rock runway for the wheeled Dash 7 that in the summer, weather permitting, comes in once a week. Four Twin De Haviland Otters head into the Antarctic interior to supply field parties.

Modern electronic communications help keep the several hundred people moving in and out during the summer. Rothera receives e-mails from the world on a daily basis whether wanted or not, and the snowmobile teams have satellite phones to keep in touch. The Rothera power plant runs 24 hours a day to supply fresh air, heat and electricity. The reverse osmosis machine produces fresh water from the sea. The "ruggedness" of our time has gone.

Unlike in our days, safety exercises in the UK and on base keep the number of Antarctic accidents down. Spur-of-the-moment trips are banned. Sea ice travel is frowned upon. The fatalities are a third of what we had.

Another major difference we noticed was women. Today they can winter over in the Antarctic. The Russians had women wintering in the Antarctic forty years ago; the Americans had women wintering in the seventies, and even the Australians allowed women to winter in the 1980s. On the *Polar Star* were five qualified women who had been turned down in the past by the British Antarctic Survey. The British response until the mid 1990s was, "We do not hire women." Cultural mores change even in the Antarctic; women are encouraged to apply.

Isolation at Rothera is now only six months before the first plane returns. Planes have landed at Rothera in the winter. Forty years ago a ship relieved us after eight months of solitariness. At that time there was no way to be rescued in the winter.

Our February 2005 three-week cruise took us along the Antarctic Peninsula to Deception Island. Before late 1967 there was a British, Chilean, and Argentinean base inside this eight-mile long, supposedly extinct, volcanic caldera. After the 1967 and 1969 eruptions there were only a few scientists on Deception Island, but there are more than 10,000 tourist visits a season, making it the most visited place in the Antarctic.

In the 1960s tourism in the frozen south was negligible. In the mid 1990s there were 8,000 tourists. In 2004 to 2005 there were well over 27,000 Antarctic tourists who vastly outnumbered the scientific personnel.

Environmental changes have seen the increase of the only two flowering plants in the Antarctic, hair grass and pearlwort, as well as the break-up of several ice shelves. The Antarctic Peninsula's temperature has risen by 2.5°C in fifty years, and 87 percent of the peninsula's glaciers have retreated. The Antarctic, like our selves, has changed from then to now. ❑

As happens from time to time, an article comes over the transom and fits perfectly with a theme or grouping of other articles. Such is the case with Michael Warr's "Antarctica: Then And Now." Michael is a new member, having joined us about a year ago. His article adds a perspective to Antarctic Editor Jeff Rubin's focus on tourism in this issue. Thanks, Michael, and welcome aboard.—C.B.

Wish You Were Here In July?

***New York Times*, "Ideas & Trends," 24 July 2005, by Mary Jo Murphy**—Could be the heat that's drawing moviegoers to the sleeper hit "The March of the Penguins." There is a vicarious chill to be had in sitting in an air-conditioned theater and watching the hardy birds tough out the Antarctic winter.

But not everyone is at the movies in July. A few hundred hardy humans in roughly three dozen Antarctic bases are wintering "on the Ice," and it can be as much a Darwinian journey for them as it is for the birds.

> *A few hundred hardy humans in roughly three dozen Antarctic bases are wintering "on the Ice,"*

The experience certainly isn't for everyone, certainly no one from the cast of "Survivor," said Glenn Grant, the science technician at Palmer Station, one of three American research posts on Antarctica run by the National Science Foundation.

"What a bunch of whiners," Mr. Grant, 43, said in an e-mail interview. "You want a real 'Survivor' show? Oh, we'll give you the real thing. But sometimes we do wish we could vote people off the island."

They can't. There is no transportation in or out, or even between bases, so humans, unlike penguins, must devise amusements for stark and sunless polar days and nights.

"Cramped quarters, monotonous daily routines and no way out make for some intense relationships," said Bill Coughran, 44, station manager at McMurdo, an American base and the largest on Antarctica. "Because of the adventurous draw of the place you get a pretty eclectic group, too: Ph.D.'s working as janitors, teachers working as dining room attendants." He added on Friday, when it was 5 degrees

ingenuity, and "winter-overs" have developed their own pagan rites and rhythms. To celebrate the solstice, the 12 men and one woman at the first winter-over at the new French-Italian station, Concordia, had theme parties for the week: Gauls versus Romans; pirates. Think duct tape and tin foil.

The chef fashioned a parrot out of fresh bread for Pirates Day. The lone woman did not compete to be "Miss Concordia," but the men had arrived at one of the highest, coldest, most isolated spots on the continent, far from the sea, where not even penguins venture, bearing wigs and makeup. Seven of the 13, including the woman, shaved their heads.

The Concordia crew was naturally devastated when two crates of wine were found stored at the wrong temperature, as Guillaume Dargaud, 36, a scientist there, wrote in his blog. "About 1,000 bottles of good wine—Bordeaux, Bourgogne, Alsace, Provence—all frozen solid." Mon Dieu.

The Americans favor hops over grapes. Mr. Grant, who, as "King Penguin," moderates talk on IceBoard.com, wrote: "Home brewing is not as popular as it was a few years ago, probably because they're stocking some better beers now. But there are still brewers making their own suds. Made some good stuff on the Ice myself."

> *"To move a croquet ball more than a few inches through the snow you have to hit it full on, with a reinforced industrial-strength mallet.*

Penguins go months at a time without eating, but how people eat varies by chef and by the country that runs the station. Needless to say, Mr. Dargaud believes the Concordia chef, who is French, to be the best. On Thursday, when it 105 degrees, lunch was blood sau- ied apples, with a vegetable soup to custard to finish, Mr. Dargaud said in e interview on Friday. But that is noth- even-course lunches on Sundays. The starts with a fish pate; then snails or e a palate-cleansing ice cream topped r and a cheese course.

'ench have none of the coveted though. Americans at McMurdo some, grown in a hydroponic hot- ouse.

Americans have their own brand of entertainment: Croquet, but "not the genteel version that most people think of," Mr. Grant said. "To move a croquet ball more than a few inches through the snow you have to hit it full on, with a reinforced industrial-strength mallet. After a few of these strokes there's pieces of ball and mallet flying."

They also bundle up and head outdoors to watch movies—"usually a comedy or cheesy cult classic"—projected onto a fuel tank. Mr. Grant likened the huddle to the penguins' "turtle" formation, which is the way the birds spend most of the winter.

As for another time-honored way to keep warm, penguins and people differ. The birds' sole goal is to mate, but female outnumbers male, and monogamy rules. An old joke tells the story for Antarctica's human population:

> *"You want a real 'Survivor' show? Oh, we'll give you the real thing. But sometimes we do wish we could vote people off the island."*

"There's a woman behind every tree." The ratio has improved, but there are still far more men than women. People can find love on the Ice, though. "The main problem with Ice marriages," as such relationships are called, Mr. Grant said, "is that they often end in tarmac divorces."

He added, "But if you can find someone you love, spending a winter together in Antarctica is magical." (He won't comment on a Web posting, not his, that shows a sign over the Palmer hot tub: "No Sex in Tub.")

Only a few hatchings of human chicks on the Ice. There are but three known Antarcticans, born at Argentine and Chilean posts. [Ex. Antarctic Editor: There are, in fact, a couple dozen Antarctic births.]

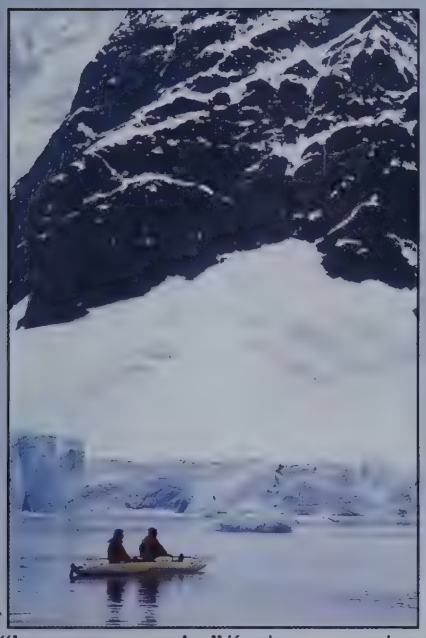
Europeans and Americans both screen John Carpenter's remake of "The Thing," in which an alien takes over the crew at an Ice station. "We don't have the cool flamethrowers that they do," Mr. Grant said. But "at the end of a long winter you may start to believe it's true: your co-workers are acting in bizarre ways."

"That's when you know it's time to find a warm beach somewhere up north in the real world," he said. "But you'll come back again, someday. Once Antarctica gets in your blood, it's there for life."

Mr. Dargaud concurs. "After you go to Antarctica," he said, "you can't function anywhere else."

In July, cold comfort indeed. ❑

Journey to Paradise (Bay)



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"In awesome wonder." Kayakers contemplate the Bay's beauty.

***Syracuse Post-Standard*, 20 Jan 2005, by Isabel Wolseley Torrey**—This is the sixth day of sailing from the southernmost tip of South America to Antarctica, but the first filled with spirit-lifting sunshine. Our ship has entered Paradise Bay, from which we'll embark onto Antarctica itself.

Ever since we've entered the Antarctic area, I've been impressed with its myriad surrounding islands and icebergs, reminding me of a spilled sack of "13 varieties of dry beans" one cooks into soup. Kidney bean islands—some with ice-frosted tops. White navy bean icebergs varying from the size of common, refrigerator cubes (called "bergy bits"; small, flat, round disks are "pancake ice") to those larger than houses. All are odd geometric shapes; some jagged, some smooth. Muted browns. Ethereal blues. Crystal-clears like Steuben glass.

This afternoon our ship halts and Zodiacs line up at the bottom of a ladder-like gangplank to hold a dozen of us at a time. Our pontoon boats thread through narrow channels of open water, dodging ice floes towered over by jutting icebergs—some vying in size and position with snow-capped mountains ringing the entire watery terrain.

The speedy Zodiac leaves a V-like trough of waves directly behind us. At our destination—centered in a sea of icebergs and mountains—the outboard is turned off and we drift slowly toward a flat ice-pancake as large as a swimming pool, its top claimed by a pair of fat, whiskered seals—one asleep, the other slithering, angleworm-like, across to slide silently over the edge, causing nary a ripple.

With the outboard off, we normally-noisy dozen passengers become speechless—all of us overwhelmed at being in a holy, ethereal cocoon. Silence reigns, broken only by faint ripples against our boat and an occasional *plip* of an iceberg shifting position in its sea berth.

A scene indescribable, incomprehensible. An immeasurable vastness, seemingly stretching into infinity, threading around, through, behind, beyond icebergs and ice floes—gleaming white, spotlighted and/or backlit by the sun—some white, floating islands so high they seem to be holding up the sky.

Behind me, sheer cliffs have no tops—or, if they do, they've penetrated a sky that's closed around them. On others, fingers of fog, wispy as gossamer, some caressing and clinging to rock walls, reluctant to leave; some evanescent, vanishing into vapor.

I sniff the air, its odor so clean, so clear it seems sheer purity. So cold—like an ice mask, chilling but comforting.

In the midst of it all, "How Great Thou Art" comes to mind: "When I in awesome wonder, consider all the world thy hands have made." I catch Barb's eye; I sense her thoughts are the same.

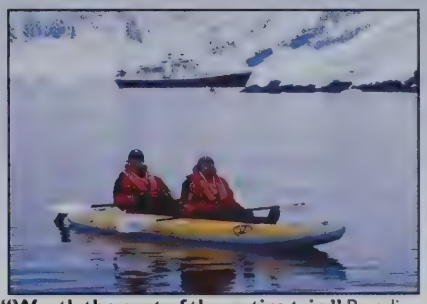
Never do I ever expect to experience again anything this awing. In heaven. Maybe. On earth? No.

But, eventually, the crew member tugs the cord; the outboard cracks the silence. And the spell.

We wend our way back to our ship, which, in the distance, sits like a child's toy in a bathtub of floating bars of Ivory soap—except that this "soap" glints in a sun whose refracting rays turn some bars into sheer crystal, some into thieves who've grabbed remnants of sky to tuck in their pockets, some into meringues plopped onto tinted-blue baking-sheets.

It is an incredible scene. No wonder it's called "Paradise Bay." The hour or so spent in this spot is in itself the climax, worth the cost of the entire trip. ❑

EDITOR'S NOTE: Story edited from the original.



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"Worth the cost of the entire trip." Paradise Bay is a highlight of many Antarctic cruises.

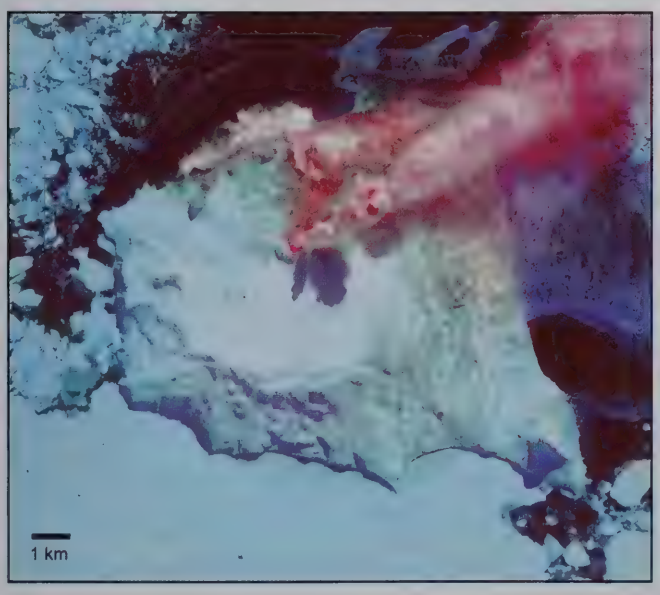


Photo courtesy HIGP/BAS

Satellite photo of Montagu Island taken on 23 September 2005 showing bright red lava flow and steam plume from an ongoing volcanic eruption. Sea ice surrounds the island.

Eruption in South Sandwiches

British Antarctic Survey (BAS) press release, 23 November 2005—Spectacular new satellite images show that Montagu Island, an erupting volcano in the South Sandwich Islands, has grown by 50 acres (0.2 km^2) in the last month. Researchers from BAS and the Hawaii Institute of Geophysics and Planetology were alerted to satellite data showing a lava flow pouring into the sea like a huge waterfall.

"Red hot lava has formed a molten river 90m wide that is moving fast, possibly several metres per second, and extending the shoreline on the north side of the island," said Dr. John Smellie, a leading authority on volcanoes from BAS.

"This event is special because Montagu Island is mostly ice covered, and it's very rare that we get to make direct observations of eruptions under ice sheets. My work usually involves studying Antarctic rock formations to find out how past eruptions affected the growth and retreat of ice sheets over the last 30 million years. This opportunity to monitor a live eruption and see how it affects ice cover is priceless."

Dr. Smellie plans to fly over the volcano early in 2006 to get more close-up views for his research and says it will be the highlight of his career.

Researchers believed that volcanic activity on Montagu, which started in 2001, was winding down until they were alerted to the new satellite pictures showing the large, fast-moving lava flow. It is the first eruption observed on the island.

Each of the South Sandwich chain's eleven islands may erupt. The islands, approximately 2000 km from mainland Antarctica, are home to 65% of the world's breeding population of chinstrap penguins. Antarctic fur seals also breed there, although neither species uses Montagu because steep rock and ice cliffs surround it.

Antarctica has only two obviously active volcanoes, Deception Island and Mt. Erebus. Another three or four dormant volcanoes are still potentially active. ❑

Due South

By Jeff Rubin, Antarctic Editor

The annual Science Planning Summary issued by the U.S. Antarctic Program always makes enjoyable browsing, for it gives a good overview of the research being funded by the National Science Foundation in Antarctica each year. I like the creative names some researchers give their projects, particularly those which are acronyms—or pseudo-acronyms which don't actually stand for anything.

For 2005-06, we have SHALDRIL (Shallow drilling along the Antarctic continental margin), ANDRILL (Antarctic drilling program) and PRIMO (Development of a Polar Remote Interactive Marine Observatory).

There's RICE (Radio Ice Cherenkov Experiment) and CREAM (Cosmic Ray Energetics And Mass), RAMP (Remote Atmospheric Measurements Program) and ARRO (Autonomous Real-time Remote Observatory), ATIC (Advanced Thin Ionization Calorimeter) and IVARS (Interannual variability in the Antarctic-Ross Sea).

Two long-running programs are ANSMET (Antarctic Search for Meteorites) and MEVOL (Mount Erebus Volcano Observatory and Laboratory).

BICEP is Background Imaging of Cosmic Extragalactic Polarization, while ISET is Integrated Study of East Antarctic ice sheet Tills and MaudNESS is Maud Rise Nonlinear Equation of State Study.

South Polar astronomers and astrophysicists have traditionally been most inventive when naming their experiments. Names fondly remembered from the past include SPIREX, COBRA, VIPER, AMANDA, GASP, SPASE, SPASE-2 and SPOT.

Among the most-inspired (and tortuous) names is PENGUIn (Polar Experiment Network for Geospace Upper-atmosphere Investigations). Clearly, someone gave that name some thought.

Even PENGUIn, however, doesn't have the ring of the project NSF officially designates as Science Event A-377-S, titled "Wide-field imaging spectroscopy in the submillimeter: Deploying SPIFI on AST/RO." SPIFI, of course, is the South Pole Imaging Fabry-Perot Interferometer, and AST/RO, the Antarctic Submillimeter Telescope and Remote Observatory.

✠

My previous column reported on "The Great Race," a BBC-TV project which had malnourished re-enactors in period costume "racing" for three months across Greenland to a pretend "South Pole," Amundsen-and-Scott style. My investigative attempts to provide an update, alas, have not uncovered a "winner" of the event. Perhaps it's a "secret." Apparently we'll have to await the broadcast of the 6 x 1-hour series, scheduled to air in March 2006.

Among the breathless PR for the series is the following: "The members of this expedition will experience first hand, in terrifying detail, the chilling truth behind the race to the South Pole—this will be the first ever TV event to test the verdict of history." Hmmm.

"This was an experiment and experience I would not have been without," wrote professional adventurer Rune Gjeldnes, leader of the Norwegian team, on his web site. "It was very interesting to feel how the real Amundsen team must have felt on their journey. Certainly it could not be the same, but I think we got a good feeling."

Gjeldnes called the Greenland trip "a very nice work out on ski, which will help me a lot" on his latest adventure. He's now midway through a 110-day, 2,800-mile trek he calls "The Longest March," a solo unsupported crossing of Antarctica. He plans to reach Terra Nova Bay by mid-February 2006.

The "Great Race"—or was it Kim Stanley Robinson's prescient novel *Antarctica*?—has inspired other masochist-adventurers. This Antarctic summer, a British group plans to "re-create as far as is humanly possible" Scott's fatal polar expedition, in a bid to raise £1 million for charity. Four ex-British Army buddies with no previous Antarctic experience, led by guide Geoff Sommers, plan to use antique equipment including wooden skis, ash sledges, Manila ropes, Green Willesden canvas tents, reindeer skin sleeping bags, gabardine parkas and skin boots and gloves.

Despite a little "cheating" (GPS, no animal assistance, rubber tent ground sheet, better-than-Scott's chow for the first couple weeks), the adventurers say "we will make it as authentic as is humanly possible—hopefully avoiding the same final outcome!" ❑

PENGUIn, RICE & CREAM

A Floating Ice Sheet Bigger Than Some Countries Has Broken Apart After Five Years Afloat

***The Ottawa Citizen*, 7 November 2005, by Tom Spears**—For five years, the prosaically named B-15A was the largest floating object in the world, itself a remnant of an even larger B-15 iceberg that calved from the Ross Ice Shelf of Antarctica in March, 2000. It was a true monster: 115 kilometres in length with an area exceeding 2500 square kilometres. Liechtenstein is 160 square km; Monaco less than two.

B-15A hung around in a location that blocked penguins from their usual access to open water. A lot of the birds died.

B-15A was still intact on Oct. 27, but had run aground in shallower water, where new heaving and other stresses went to work on it. By Hallowe'en, it was shattering. The remnants are still huge, but each is much smaller than Papa B-15A. (Or, indeed, Mama. We are egalitarian in our anthropomorphisms).

The European Space Agency's Envisat satellite uses Advanced Synthetic Aperture Radar (ASAR), which is sensitive to ice, and has been tracking the movement of the drifting ice object continuously since the beginning of this year.

The new icebergs, named by the US National Oceanic and Atmospheric Administration (NOAA) National Ice Center, will continue the family name: the three largest island-sized pieces have been called B-15M, B-15N and B-15P. ❑

"Go Hard Or Go Home": Building the El Station

by Jeff Rubin

PHOTO BY CHARLIE KAMINSKI/USAP

Network engineer Mike Ray in the new SOC (Station Operation Center)

Polies, as they proudly call themselves, have their own lingo.

No one ever calls it "the South Pole" or even "the Pole." It's just plain "Pole," as in, "I got an offer to go to Pole and fell in love with the place."

No one ever calls the station by its official name, Amundsen-Scott South Pole Station—that's used only in print. And the new elevated station they are building, by the way, is just the "El Station."

Things left outside quickly get "cold-soaked."

Polies often shun their real names for nicknames. "Nobody knows me as Carlton," says construction project manager Carlton Walker, who started with the U.S. Antarctic Program in 1990 as a plumber/pipe-fitter and has spent half of the last 16 years living at Pole. Now, he oversees the construction crew of 120 workers, who call him "C-Note," or simply "C."

Recent Pole residents have included Slaughterballs, Slinky, Jake Speed, Long Break Bob, Tree Beard, Froggy, Cupcake, Princess, Hippie, P-Dog-E, Spermy and Nude.

"Ain't That Tough"

The workers—25% of them are women—work a nine-hour day, six days a week. In the 24-hour summer daylight, three crews work shifts round the clock. "It's a harsh continent," they rib each other, then admit that things are really not too bad at all, what with abundant good food, expense-free living, and email and Iridium phones to break the isolation (for about 12 hours a day, when a satellite is in range).

"We say 'It's a harsh continent,'" says Walker, "but we say it tongue-in-cheek, because it's just not. When you look at the guys that built the original Pole station, or when you look at the living conditions that even some of the other stations have now, compared to what we have at Pole, it just ain't that tough. It just ain't."

Burning Toast

"It used to be, when you went down there to winter, you truly were cut off from the world," Walker continues. "And there are still people who choose to live that way during the wintertime—but that's their personal choice. And that leads to what we call the 'toast factor.' Your world gets very narrow and very small."

The easiest way to get through the winter, some Polies believe, is to find your groove, work-wise, socially, and stay with it. Stay busy, stay focused. "It's not like you're being sentenced to an endless term," says one veteran. "You have a definitive start date and a fairly definitive end date. Put your head down and just go."

Cold-Coping Tips

Polies use chemical heat packs by the thousands, in boots and mittens, but complain that they don't heat fingers.

Opinion is divided about beards, worn by about half the men. They warm the face, but ice up. Another beard hazard: "snotsicles."

"You definitely learn to not let yourself sweat too much or you'll pay for it later," says materials person Becky Stieb. "It's also smart to change your socks at every break and every meal. When I come in from outside, all of my clothing, headlamp, notebook goes right into the heat duct to warm back up. You also learn to do almost everything with mittens on, as my hands have no chance of keeping warm in gloves if I'm out for too long."

Frostbite is not a big problem, but frostnip—a milder form—is common. It's described as "like a needle going into your face" or "a pair of pliers got hold of your nose and twisted." Frostnipped skin eventually turns white and goes numb. "That's one of things we drive into people: watch yourself and the people around you," Walker says, "because once the skin goes white, you have no clue it's on you." Injured skin peels like sunburn.

Since there's very little wind at Pole, sunlight can be warming and workers position themselves to absorb solar radiation. "If it's 30 below and the sun's shining and there's no wind, it's just gorgeous," says mechanical construction coordinator Scott "Scotty Bob" Smith. "But below 50 below, even though the sun's shining, you can't feel it."

Touching metal barehanded burns like a hot stove. Mistakes hurt. In his first year on the job in 1993, carpenter Doug "Dog" Forsythe, now a construction coordinator, momentarily forgot where he was. He used his mouth to adjust a 16-penny nail, at 50 below. "It was attached

(CONTINUED ON NEXT PAGE)

PHOTO BY CHARLIE KAMINSKI/USAP

Comms supervisor Tracy Sheeley in the old comms center

(CONTINUED FROM PREVIOUS PAGE)

PHOTO BY BILL HENRIKSEN/USAP

A single room in the new station

that fast, stuck on my tongue," he laughs. With no time to get to shelter, he grabbed the nail with his glove and ripped it off: "There was a little tongue on that nail when I hammered it in."

High and Dry

Pole sits at 9,300 feet, but low barometric pressure makes it feel more like 11,000. Just walking around—let alone doing heavy work—can be exhausting. Everybody sucks wind for the first few days in the oxygen-starved atmosphere. Headaches, weird dreams and poor sleep plague the beginning of the season for some.

Others find gingko or Diamox (acetazolamide) helpful for fighting altitude sickness. But not everyone does. "It's really weird," Smith warns. "Diamox will make anything carbonated—beer or soda—taste like the inside of a metal can. You might as well just throw it away and eat the can. Diamox also makes you tingle in all the weirdest spots. Your eyebrows are twitching, or your hands will start tingling. So I don't bother with it."

PHOTO BY BILL HENRIKSEN/USAP

A double room in the new station

With relative humidity just 3%, dehydration is a constant threat. To avoid ending up in Medical with an IV in your arm, Polie advice is "pound the water, lay off alcohol, and cut back on caffeine." To prevent nosebleeds, pack your nostrils with Vaseline. And when your fingertips crack in the dryness and won't heal, repair them with Superglue.

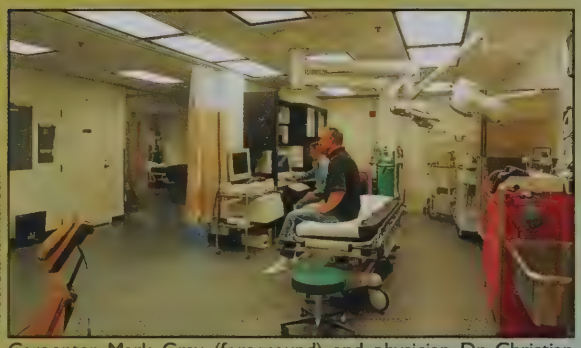


PHOTO BY BILL HENRIKSEN/USAP

Carpenter Mark Gray (foreground) and physician Dr. Christian Otto in the new medical facility.

Hangovers, thanks to the dryness, are especially wicked. "You've never had a hangover at Pole?" asks Walker. "Trust me, it's gonna suck."

As in days past, scarce liquid water still limits showers to two minutes, twice a week. Nobody minds. As one Polie puts it: "If you're taking more than two showers a week, unless you're bathing in lotion, your frickin" skin's gonna fall off." Besides, "after you've taken a shower, it's like you've washed off a layer of oil, and I swear to God, I get colder when I'm clean than I do when I'm dirty."

PHOTO BY BILL SPINDLER/USAP

The gym in the new Elevated Station features a double-height basketball court, just a third smaller than NBA regulation size.

Off the Chart

Polies must innovate constantly, since most tools and machinery weren't designed for the Deepest Freeze. Says Walker: "We call suppliers and ask, 'Will this work at 90 below?' You hear a buzzing sound right after you hear that click."

"You will break things down there that you have never seen broken before—hammer handles, wrenches, you name it," he adds. "Anything made out of plastic, you're going to shatter it. Any tool that you're going to work with outside, if you're taking a 15-minute break, you take it inside with you."

Machines get lengthy warmups, since "even our warmest temperatures are usually off the manufacturer's chart," says fleet operations supervisor Tom Verville. As soon as it's turned off, machinery is plugged into 110-volt AC to run heaters on the engine block, battery, transmission and oil pan.

Even duct tape, that all-purpose problem-solver, fails at Pole. "If it's outside, you can hardly pull it off the roll," says Forsythe. "It'll separate. But if you have pieces and take them outside, it's like pushing two pieces of paper together—they won't even stick. We just come up with something else."

Rubber tires fall off rims at -60° F, so much of Pole's heavy equipment is track-mounted.

Metal-handled tools are insulated with tape or rubber, because no glove made will prevent a piece of steel at -20° F from sucking the heat out of a hand. Since the fan used to cool the motor on power tools chills right through gloves, savvy workers block up the vents (overheating the motor is impossible at Pole).

Power cords are uncoiled before going outside, where they quickly freeze stiff and can't be rolled up again without shattering.

Cold-soaked wood splits and cracks, so timbers are predrilled or worked on indoors.

Magnetic barrels on screw guns help grab screws out of tool bags. Small items are put inside jackets or shirts to keep warm until use.

Some tips of the trade are hard-won. "You quickly learn not to put a pencil in your mouth when marking measurements," says carpenter apprentice Kate Allen. "The lead sticks to your tongue."

Is It Progress?

When it's completed in early 2008, the El Station will be the most modern facility in all of Antarctica, boasting features unheard of—no, *unimagined*—just a generation ago.

"Some people say it's progress, and in a way it is," muses a thoughtful Polie. "I mean, it will be a station that is state-of-the-art in a lot of ways. But there are people who will show up at Pole, and basically never walk outside, unless to go back to the plane. Is it progress when there are people who will come here and never go outside? Not in my mind." ❑

Fabled Dome No Longer Home

by Jeff Rubin

Again this year, workers building the new Elevated Station at the South Pole face a "need-and-feed" situation, meaning that they are sometimes waiting for materials, which are put to use as soon as they arrive on an incoming flight.

"We hope that at the end of this summer season we have a lot of materials on site," eliminating "need-and-feed" for next year's work, says construction project manager Jerry Marty.

The backlog is a legacy of the bad weather experienced during the 2002-03 season, when the project was short by 30 flights and nearly 750,000 pounds of material went undelivered.

"We're still working our way out of that hole," Marty says.

Nevertheless, "the progress made this winter has been excellent," he adds. "That's going to allow us to achieve the major goal for this summer: conditional occupancy of the last wing of the Elevated Station."

By the end of January 2006, Marty says, the last three sections of the station will be ready: the 66-bed accommodation wing known as A-4, the station operations center/communications/administration wing (B-3), and the double-height gym wing (B-4), which includes a 60'x30' basketball court (NCAA/NBA regulation size is 94'x50') and a balcony/workout area overlooking it.

"At that point, we are totally moved into the Elevated Station," Marty says. "All three of those wings are almost done right now [early November 2005]."

Exterior cladding of the El Station begins this summer. Using a combination of ladders, scaffolding, manlifts and manbaskets on cranes, workers will screw pieces of gunmetal-grey aluminum siding, glued onto 3/8-inch plywood, to the outside of the station. The pieces, as large as 4'x12', will eventually cover a total of approximately 130,000 square feet. Cladding will be completed next summer, because temperatures drop too low to do the work over the winter. Asked if putting the "skin" on the station is tricky, construction project manager Carlton Walker calls it "nothing too out of the ordinary."

Another goal this summer is to finish the Dark Sector Lab science facility, allowing occupation by its first science tenant, BICEP (Background Imaging of Cosmic Extragalactic Polarization, designed to measure the polarization of the cosmic microwave background with great precision, thus answering questions about the beginnings of the universe).

"All of the science will be going out of Skylab this summer," Marty says, "and that building goes black and cold." Skylab it to be demolished in summer 2008-09.

Demolition projects this past winter at Pole removed three structures: the former two-story Galley/Bar, and the former greenhouse, both housed under the Dome, and the old Biomed facility, located in the under-snow arch in front of the Dome. Removal and retrograde of these structures eliminates the need to heat, light and power them, reducing the station power plant's workload.

Beginning in March of 2006, overwintering workers will begin taking down the remaining buildings under the Dome: the Comms/Admin building and the Science/Winter Housing building. In the adjoining arch, the old Power Plant, Garage/Shop and Gym are also to be demolished over the winter.

Thus, Pole's fabled Dome will be no longer be anyone's home.

"The plan is that there would be no further occupancy of the Dome," barring unforeseen circumstances, Marty says. "There is a very high probability that the last people have wintered in the Dome." ❑

A View From the El Station: To the right is the Atmospheric Research Observatory (ARO), completed in 1997 and occupied predominantly by NOAA. Behind it is the clean-air sector. The 30m red-and-white tower holds NOAA instrumentation.

The area with the small flags and yellow tape is the location of the 1 January 2006 Geographic South Pole. (Because the ice sheet moves about 10m per year toward Brazil, the location of the "new" South Pole is recalculated annually.) To the right of the new Pole is the ceremonial pole, a red-and-white striped 'barber' pole topped by a chromium globe and surrounded by the flags of the 12 original Antarctic Treaty signatories.

This photo was taken by winterover Bill Spindler, Title II inspector for South Pole station construction, from the window behind his desk in the computer lab. Says he: "This window has been amazing ... I wish I could take it with me—the view that is—when I leave." ❑

George Prehn, carpenter foreman, in the new computer lab.

PHOTO BY BILL HENRIKSEN/USAP

Antarctic Notes

Japan's Whalers Bite Off Too Much

***The Australian*, TOKYO, 8 November 2005, by Peter Alford**—Japan's Antarctic whaling fleet sailed this morning to its biggest kill in 20 years, leaving fisheries officials unsure if they will be able to handle the whale meat surplus. When the fleet returns in mid-April, its catch will increase the supply by 70%. Under JARPA II, the new Antarctic program Japan unilaterally adopted earlier this year, the six-vessel fleet will harvest up to 945 minke whales in the next six months (the previous seasonal catch limit was 440) plus 10 fin whales, still listed under the international convention on endangered species. Next season, the fleet will also start hunting humpbacks, and when JARPA II is in full swing, the seasonal quota will include 50 humpbacks and 50 fins. Japan insists whale meat is a "by-product" of its controversial scientific whaling, though its sale funds about 90% of the program's US$4.5 million annual cost. Already, about 45% of the annual catch is distributed as government-subsidized meals through schools and local authorities to foster what the authorities call Japan's traditional "whale culture." The lowest quality meat, about 55% of the total, is processed for canned food. Only the best 10% goes to markets. With the North Atlantic fleet recently returned to port and about 1000 tonnes in stock, retail prices are firm. Standard red meat costs about US$5 for 100g (3.5 ounces) but the best quality *onomi*, the prized fatty tail meat, is US$85 for 100g, when anyone can find it. ❑

Lake Vostok Drilling to Proceed

***Science*, 28 October 2005, by Mason Inman**—A team of Russian researchers is poised to resume drilling through Lake Vostok's ice cap next month, restarting a project that has been on hold since 1999 while experts debated how to proceed. Despite an extensive review, some still fear that drilling could alter the lake and make it impossible to obtain untainted water samples. But the Russians have promised to go slowly. In 1999, they stopped about 130m short of the lake's surface. Starting in November, they plan to use a mechanical drill to go 50m further in the 2005-'06 season, drill mechanically another 50m in 2006-'07, then switch to a hot, ice-melting probe for the final 30m in 2007-'08. After poking through the base, they will allow water to flood up into the borehole and freeze, then take out an ice core. Critics worry that the pressure may drive lake water into the drilling fluid, pointing to a bad experience with the North Greenland Ice Core Project in 2004 when, 5m higher than expected, water flooded into the hole and got contaminated with drilling fluid. ❑

Australia Tests New Oil Clean-up

***Australian Broadcasting Corp. Online*, 19 October 2005**—Australian scientists are attempting to aid natural organisms to develop new methods of oil spill clean-up in Antarctica that might also be effective in Arctic regions. The project will use water and heat technology to remediate contaminated soil. Team leader Martin Riddle says the techniques are similar to those used in warmer climates: "It's using the natural bacteria that live in the Antarctic soils, modifying their environment to create the right conditions for them to grow. With just a little bit of nutrients, a little bit of free water (liquid water rather than ice), and a little bit of extra heat (putting a little blanket over the top), we can get the breakdown speeded up to the point where in six weeks you get more than would've happened naturally over 10 years." ❑

Antarctic Ice Melts as Sea Warms

***Reuters*, LONDON, 17 October 2005, by Jeremy Lovell**—Antarctica is melting, adding to the inexorable rise in global sea levels, endangering millions of lives and whole economies, leading scientists said. But while the effect is well known after years of monitoring, the reasons for the sea warming are not. "We know sea levels will rise. We need to know by how much and why," said Anthony Payne of the University of Bristol, one of the organizers of a major scientific conference at the Royal Society, Britain's national academy of science. He added that there was a net loss of mass in Antarctica as the snowfall in its center was more than offset by sea ice melting around the edges. The key was to find out whether the process was accelerating, or whether it might stabilize or even reverse. Eric Rignot, a NASA scientist, said marine ice in Antarctica was in general retreat due to rising sea temperatures. ❑

Ponting Photos at SPRI

***news.bbc.co.uk*, 9 October 2005**—Photographs taken by Herbert Ponting on Capt. Robert Scott's ill-fated 1910-1912 Terra Nova expedition have gone on display at the University of Cambridge's Scott Polar Research Institute (SPRI). The photographs have been produced from Ponting's glass-plate negatives. SPRI bought the images—which chronicle the expedition's scientific work and day-to-day life—last year with a £533,000 Heritage Lottery grant. They will remain on view until 31 March 2006. ❑

Three Chileans Die in Crevasse

***news.bbc.co.uk*, 30 September 2005**—Three Chilean soldiers whose Snowcat fell into a 40m deep crevasse on Wednesday have been found dead. They had been on patrol near Chile's O'Higgins base. Rescuers had to prise open the Snowcat's roof to recover the bodies. Four other men had managed to climb out of the vehicle and were pulled to safety. The Chilean rescue operation was carried out with the assistance of the Argentine army, which abandoned efforts to find two Argentines who fell into a much deeper crevasse more than a week ago. ❑

Two Argentines Lost in Crevasse

***Reuters*, BUENOS AIRES, 29 September 2005**—Rescue workers on Thursday called off a 12-day search for two Argentine men from Jubany station on King George Island in the South Shetlands whose snowmobile plunged into a crevasse, saying there was little hope of finding them alive. The two men—a scientist and a naval officer—were traveling between research bases when their vehicle plummeted through snow cover into a crack at least 130m deep. ❑

Humans Stress Penguin Chicks

University of Washington (UW) via *Newswise*, 27 September 2005—Newly hatched Magellanic penguin chicks in Argentine breeding grounds with a large number of human visitors show a significant spike in levels of a stress-related hormone compared to chicks hatched in areas not visited by humans, UW researchers have found. It wasn't until chicks with limited human exposure reached 40 to 50 days old that they showed a stress response like the newly hatched chicks in areas frequented by humans, said researcher Brian Walker, co-author of an article in the October issue of *Conservation Biology*. ❑

Widening Ozone Hole As Big As Europe

***Sapa-AFP*, PARIS, 30 August 2005**—The seasonal ozone hole over Antarctica has widened sharply this year, making it the biggest since 2000 and the third largest on record, according to measurements by the European Space Agency (ESA). Data returned from an ESA satellite showed the hole had swollen to an area of 10 million km^2 in mid-August, as large as Europe. The hole is likely to expand further before reaching its maximum in September, ESA said. ❑

Drake Opening Led to Global Change

British Antarctic Survey (BAS) press release, 30 August 2005—BAS scientists have discovered that South America and Antarctica rapidly split apart 30-50 million years ago. "The two continents separated extremely quickly in geological time, forming a shallow 'gateway' between the Pacific and Atlantic oceans," says lead author Dr Roy Livermore in *Earth and Planetary Science Letters* (vol 236). Such a gateway, by completing a circuit of water around Antarctica, led to the formation of the Antarctic Circumpolar Current, the world's largest deep current which now transports some 130 million m^3 of water per second through the Drake Passage. The effect was to cut Antarctica off from warm southward flowing currents, leaving it frozen. ❑

Scientists Probe Antarctic Asteroid

***Australian Associated Press*, 25 August 2005, by Robyn Grace**—A house-size asteroid that exploded over Antarctica in September 2004 may help scientists prepare for the entrance of larger bodies into the Earth's atmosphere. The 1000-tonne asteroid crashed to Earth in millions of pieces 900km from Japan's Syowa station. A trail of dust recorded by a physicist 1500km away at Australia's Davis station shows that if the 10m-wide asteroid—the largest body to enter the Earth's atmosphere in a decade—had not fragmented when it hit the atmosphere, it would have had an impact similar to that of an A-bomb.The findings, published in today's *Nature*, are significant to climate studies. Particles contained in the dust cloud have been collected from Davis, Mawson and Casey stations and will be used to validate models of atmospheric circulation. ❑

New Finds at Scott's Hut

Antarctic Heritage Trust (AHT) press release, 25 August 2005—A backpack and pony hood were excavated by conservators battling to move tons of snow and ice that had built up on and around Capt. Scott's Cape Evans hut, collapsing part of the stable roof. Archaeologist Dr Neville Ritchie dug up the items, which have been conserved and will be on display in the Canterbury Museum until December. The canvas pony hood is believed to be an experimental face mask to prevent snow blindness. Scott's diary mentions that the expedition ponies suffered snow blindness. This is the only known example of a

Antarctic Sea Ice May Be Increasing

***United Press International*, 17 August 2005**—A new NASA-funded study finds that predicted increases in precipitation due to warmer air temperatures from greenhouse gas emissions may actually increase sea ice volume in the Southern Ocean. "Findings from our simulations suggest a counterintuitive phenomenon," says Dylan C. Powell, co-author of the paper published in June's *Journal of Geophysical Research*. "Some of the melt in the Arctic may be offset by increases in sea ice volume in the Antarctic." The researchers used satellite observations for the first time to assess snow depth on sea ice, and included the satellite observations in their model. As a result, they improved prediction of precipitation rates. ❑

LSU Exhibits Antarctica

***2theadvocate.com*, 14 August 2005, by George Morris**—The new "Experience Antarctica" exhibit at Louisiana State University's Museum of Natural Science puts on display current Antarctic research by several LSU faculty members. The exhibit is designed to look like the inside of a Quonset hut in Antarctica, complete with video of a bleak, wind-swept view through the "windows." Exhibits include pollen fossils discovered in Antarctic sediment cores, the history of the continent and its exploration, and theories about why Antarctica is where it is and why it's so cold. Also on display are rare meteorite samples and a replica of a skull of Cryolophosaurus, a dinosaur that once lived in Antarctica. ❑

Another Eruption at McDonald Islands

***The Australian*, 11 August 2005, by Selina Mitchell**—Sub-antarctic McDonald Island has doubled in size, from 1.13km^2 to 2.45km^2, in a decade, with lava slowly engulfing two neighbouring outcrops after several eruptions over the past 13 years. Its new pumice beaches have attracted king penguins. The latest eruption occurred last week and was detected by remote satellite sensing. ❑

Ecosystem Under Collapsed Ice Shelf

***Associated Press*, SYRACUSE, N.Y., 20 July 2005, by William Kates**—An ecosystem of knee-high mud volcanoes, snowy microbial mats and flourishing clam communities lies beneath the collapsed Larsen Ice Shelf. The discovery made in February in a 850m-deep glacial trough in the northwestern Weddell Sea was detailed this week in *Eos*. "Seeing those organisms on the ocean bottom, it's like lifting the carpet off the floor and finding a layer that you never knew was there," said Eugene Domack, the report's lead author. It appeared to be a cold-vent, or cold-seep, ecosystem, fed by chemical energy from the Earth, rather than one driven by photosynthesis from the sun or hot emissions rising from inside the planet. Domack said the likely energy source was methane from deep underwater vents raked open by receding glaciers: "It looked like a thin slice of cheese had been laid over the sea floor. Sporadically placed, there were mud mounds, little volcanoes, two- to three-feet high and several feet across, spewing out fluid and mud particles," Domack said. Surrounding the mud volcanoes were clusters of large clams. Domack believes the ice shelf likely provided a protective shelter, allowing the chemical habitat to thrive. Now that the ecosystem has been exposed, it is imperiled by fattening deposits of sediment produced through erosion run-off and from dying algae settling to the bottom. ❑

Navigation Hazards Found Near Palmer

***Rednova.com*, 6 June 2005**—Using a depth sounder with GPS, and an autonomous underwater vehicle, scientists have created the first detailed chart of the ocean floor around Palmer Station, revealing previously unknown submerged rocks, among them a set of sharp pinnacles rising nearly 100m to a depth of 6m below the surface, near routes generally taken by ships through the area. The new chart, the first in 50 years, was made by researchers from the Woods Hole Oceanographic Institution and the University of Southern Mississippi as they looked for sites for a new underwater observatory. The previous chart was incorrect by at least 0.5 nautical miles. ❑

Scott Base Tests Turbines

***www.stuff.co.nz*, 5 June 2005, by Greg Meylan**—Antarctica New Zealand (ANZ) wants to build wind turbines at Scott Base to reduce its dependence on U.S.-supplied diesel fuel. If wind and weather information is favourable, at least two 30m turbines will be bolted to rocks about 1km from the base. More turbines would be built if a deal was struck to supply power to McMurdo. Peter Brookman, facilities engineer at ANZ, said promising data had been gathered since a 20m pole was erected in March to measure wind speed and temperature, but at least six months' more data was needed. Dr Alan Hemming, senior adviser to the Antarctica and Southern Ocean Coalition, said the only real negative issue is birdstrike by skuas, but the birds got used to new structures quickly. He added: "The visual disturbance would not be great as it is a fairly ugly place." ❑

CO_2 Highest for 650,000 Years

***BBC News*, 24 November 2005, by Richard Black**—Scientists working with the European Project for Ice Coring in Antarctica (EPICA) report that current levels of the greenhouse gases carbon dioxide and methane in the atmosphere are higher now than at any time in the past 650,000 years. Other research, also published in the journal *Science*, suggests that sea levels may be rising twice as fast now as in previous centuries. The evidence on atmospheric concentrations comes from Dome C, where, over a five-year period commencing in 1999, scientists have drilled 3,270m into the ice sheet, which equates to drilling nearly 900,000 years back in time. Said project leader Thomas Stocker from the University of Bern, Switzerland: "We find that CO_2 is about 30% higher than at any time, and methane 130% higher than at any time; and the rates of increase are absolutely exceptional: for CO_2, 200 times faster than at any time in the last 650,000 years." ❑

Chinese to Map Grove Mountains

***Chinanews*, 16 September 2005**—China is to survey, name and map islands in the Grove Mountains region. As China's expeditions have made great achievements, the International Committee for Antarctica Affairs formally commissioned the Chinese Antarctic Center of Surveying and Mapping to explore and name the 40-odd unnamed islands, and to draw a geological map of the region with a scale of 1:500,000. ❑

Antarcticans Get Together

by Charles H. Lagerbom

Port Clyde, Maine was the meeting place for an extraordinary gathering this past July when over 30 people, all with an Antarctic connection, congregated at the seaside home of Paul Dalrymple, longtime editor of the Antarctican Society newsletter. Ages and experiences of attendees ranged greatly but all shared some affinity for the seventh continent. Several expeditions, stations and eras were represented. For example, Bob Dodson was a member of the Ronne Antarctic Expedition 1947–1948. Several IGY participants were also present such as Ken Moulton, Paul Dalrymple, Charlie Bevilacqua, Tony Gow, S.L. "Denny" DenHartog and Bill Marshall.

Antarcticans from the 1960s and 1970s in attendance included Bob Dale, Antarctican Society President Rob Flint, Jerry Huffman and Bill Meserve. Antarcticans from the 1980s included Steve Dibbern and Bob and Marie Hurtig; the 1990s included Diana and Drew Logan (holders of the record for most winter-overs at the South Pole), Will Silva, artist Lucia deLeiris, Kirk Spelman, and APS Membership Chair Charles Lagerbom. Antarcticans from the new millennium included Lynn Arnold and Meghan Prentiss. Others attendees also had family ties to the continent, such as Richard E. Byrd's grandson Lev Byrd, polar pilot Bernt Balchen's widow Bess Balchen Urbahn, and Jane Siple, daughter of Byrd's "Boy Scout" Paul Siple; she honeymooned in the Antarctic with her icthyologist husband Hugh DeWitt.

For this gathering, some brought their wives, some brought their dogs, several brought beer and wine, and one brought his parents; but everybody brought a story or two, and the conversation was lively. There was artwork to peruse, books to buy, experiences to share and first-day covers from the IGY to be handed out. The grill was put into action, the lobsters were professionally prepared, and side dishes galore provided everyone with sustenance.

The official reason for the gathering was to touch base with Antarctican Society members as to the direction and future of their society. New President Rob Flint led a general discussion about it and most came away with the positive feeling that while some of the membership was indeed getting older, there were younger Antarcticans willing and able to step up and help guide the society in future years. ❑

Magnetometer in an ice cave.

The Art of David Abbey Paige

A Gray Day: The *Bear* loading at Ver-Sur-Mer Inlet.

Our thanks to Laura J. Kissel, Polar Curator at The Byrd Polar Research Center Archival Program, for leading us to and providing samples of the art of David Abbey Paige. The work of this artist has been compiled in a book by two German historians, Dr. Reinhard A. Krause and Dr. Lars U. Scholl entitled **The Magic Of Antarctic Colours.**

Paige applied for a berth on the Byrd 1933-1935 expedition and was initially rejected by Richard E. Byrd who felt there wasn't room for an artist on the roster. Byrd later relented, and we now have this treasure of paintings commemorating an important phase of Antarctic exploration.

Two things members should note: *First, a web site devoted to David Paige and his work can be found at http:/library.osu.edu/polar/paige/paige/html. Second, the book,* The Magic Of Antarctic Colours*—truly a collector's item—can be obtained through Laura Kissel at The BPRC. The cost is $29.95 plus shipping and handling. You can contact Laura at kissel.4@osu.edu or LJK ,BPRC, 134 University Archives ,2700 Kenny Rd., Columbus Ohio, 43210.* ❑

Due North

By Dave Norton, Arctic Editor

Poles Apart: High-Latitude Logistics

The proverb at the bottom of each message from one of my e-correspondents runs, "Before arguing with someone, walk a mile in his shoes. Then you're a mile ahead...and you've got his shoes."

Arctic logistics specialists should heed this saying. Then too, perhaps polar investigators at both ends of the earth should "walk a mile in the shoes" of the very logistics facilitators upon whom they depend. In 2005, I switched roles from field investigator to being a stay-at-home logistics facilitator to help my own, and a couple of other NSF-funded projects in the Arctic. Calling the switch an "eye-opener" understates the full impact of my experience.

For starters, I now identify with many under-thanked people who execute tasks such as purchasing, scheduling, allocating space, wresting permits from regulatory agencies, packing gear, meeting flights, hiring support personnel, drafting bid specifications, satisfying information technology (IT) needs, reporting ... and so on. The experience makes me hope that I have appreciated and honoured logistics support folks by sharing with them the credit and the satisfaction due them for their contributions to research.

By being so prone to changes, polar logistics surprises its users. Threats to the delicate interagency and budget balancing acts that have long provided icebreaker support for U.S. polar research were detailed in the July 2005 issue of *The Polar Times* (pp. 4-6) are one instance of such changes. Consider, for another example, my surprise at how glibly Arctic investigators in Alaska in 2005 used short bursts of helicopter time to execute tasks for which my generation allocated several days of boat, snow machine, or fixed-wing aircraft transportation. Before researchers can get cold, miss hot meals or let e-mail messages grow stale, a helicopter whisks this generation back to comforts, cafeteria and connectivity. Relative to arrays of traditional field stations, the spatial distribution of these helicopter-supported sampling sites tends to be tightly clustered. Everyone hurries. The fraction of investigators' field time actually spent outdoors (including getting to and from sampling sites) has shrunk further than I imagined possible. A good change if everything is judged by efficiency. On the other hand, some non-technological realities never change. Adverse weather remains the great leveler of ambitions and technologies.

High latitude research resists cookbook approaches. Projects still defy being shoehorned into one-size-that-fits-all.

Another result of trying my hand at facilitating other investigators' fieldwork was to begin to appreciate complexities and stylistic differences among various logistics operations. High latitude research resists cookbook approaches. Projects still defy being shoehorned into one-size-that-fits-all. Each project or task stimulates unique inventive solutions. This field season taught me how presumptuous it is to think that there is only one way through or around a logistics challenge. It also reminded me that being in the field "with wind in yer face" lends cogency to problem-solving unfelt by someone sitting at a computer screen several time zones distant or at tens of degrees lower latitude. Yet, sadly I saw one project's field season nearly ruined by disagreements between logistics providers. Well-intentioned facilitators, convinced of the correctness of their own approach, excluded alternative approaches.

Some of these conflicts in the Arctic may stem from sectarian differences between Antarctic and Arctic styles of logistics support. South Polar research necessarily draws upon a larger corps of logistics facilitators than we see in the North, so I suspect that Antarctic veterans available to try their logistics style on Arctic problems outnumber Arctic veterans who could try the opposite.

In hopes that it will elicit some constructive debate, let's compare the two sects of polar logistics. In Antarctica, the absence of human residents in pre-existing communities and cultures gives the scientific establishment, including its logistics support arm, free rein to determine which investigations are supported and how. Antarctic logistics can thus act as gatekeeper to a whole continent. Up to a point, logistics act as an equally authoritarian gatekeeper in the Arctic. Closed systems in the Arctic include icebreaker-, submarine-, and remote site-based projects. Other Arctic projects, however, gravitate toward open systems, in that they depend upon participation by northern residents as hosts, collaborators and facilitators. Citizens of the Far North assign merit, and view science in ways that depart from views espoused by national scientific establishments. Although northern communities may act as gatekeepers, they do so independently of the scientific meritocracy. If they elect to host scientific enterprise, Arctic residents may even compete among themselves for logistics-related and other scientific opportunities, or otherwise maneuver to win favour with scientist-guests.

Logistics in the inhabited Arctic must strike people used to Antarctic logistics as "messy." Honouring wishes expressed by one or more Arctic communities requires levels of commitment and effort beyond those normally expected of logistics contracting offices.

Honouring wishes expressed by one or more Arctic communities requires levels of commitment and effort beyond those normally expected of logistics contracting offices.

Two options face logistics facilitators (and others in the infrastructure of research support) reluctant to involve themselves in the "messiness" of community-based science in the Arctic. One is to scorn Arctic communities, while steering projects toward remote sites or closed-system platforms that avoid human entanglements as much as possible. The second strategy is to respect and defer to those who *are* inclined to community-based science. The first strategy risks antagonizing folks close at hand, who figuratively have plenty of traction because they are still wearing their own proverbial shoes. The second strategy can build enduring friendships with these same folks, the residents of the Far North. ❑

ESA: Polar Explorer Delivers Rare Snow-Depth Data To ESA For Cryosat Validation

/noticias.info/—The CryoSat validation programme took another important step forward [recently] with the official handover of a unique set of data that had been collected by the intrepid Dutch Polar Explorer Marc Cornelissen on behalf of ESA during his recent expedition to the North Pole.

In March, Marc Cornelissen left Cape Arctichesky in northern Russia to lead the Pole Track 2005 expedition on a 1,000 km ski trek to the geographic North Pole. Along the way, the expedition team deployed mobile weather stations to transmit meteorological data, and collected a valuable set of snow depth measurements following a protocol that had been developed with ESA.

"While snow depth information holds the key to producing accurate maps of ice-thickness change over time with CryoSat, there are surprisingly few of these basic measurements readily available," says Malcolm Davidson, ESA CryoSat Validation Manager. "As a rule, people don't spontaneously spend weeks on end on the ice measuring this parameter. Marc Cornelissen's careful measurements of snow thickness during his expedition are thus very valuable indeed. The data will now be analysed by scientists participating in ESA's CryoSat calibration and validation programme."

In the long run, the data collected during the Pole Track expedition will contribute to the extensive validation program accompanying the CryoSat mission. The aim of this program is to collect independent measurements on the ground and from aircraft to fully understand and characterise the geophysical uncertainties in the CryoSat products. The data collected during the Pole Track expedition will be used, for instance, to estimate how much snow on top of sea ice affects the retrieval of sea-ice thickness information. Other large-scale campaigns have taken place in different locations across the Arctic over the last two years and have addressed different validation questions. Through the validation activities, CryoSat is expected to produce global maps of ice thickness change with unprecedented accuracy.

The planned 1,000 km expedition was unfortunately cut short when the Pole Track logistics provider was denied permission to build their base camp near the North Pole. Nevertheless, Marc and his fellow explorers Petter Nyquist from Norway and Doug Stoup from the USA did manage to collect around 300 km worth of snow thickness readings before abandoning the expedition.

However, the frustration of the logistical issues forcing the trek to be abandoned would seem less important compared to when Marc came face to face with a huge male polar bear on the verge of attack. Fortunately, Petter was able to shoot his gun to scare the bear away and Marc escaped with his life, albeit shaken by his close encounter with death. This experience certainly brings home the dangers that researchers and explores alike face when out in the field in the name of science and climate research. In an interview with Marc, he recounts some of his experiences and expresses his concern about climate change:

What were the biggest challenges you faced with this particular expedition?

Besides the collapse of our logistical support that forced us to abandon the mission, polar bears turned out to be a big challenge. A healthy population of persistent bears live near Cape Arctichesky. On three occasions we had to explain to a polar bear that it had to go.

Despite the expedition being cut short, how much data did you manage to collect for CryoSat validation purposes?

In the end we only did 300 km out of the 1000 km that was planned. We were out for three weeks, almost every day we made snow thickness readings. Every evening after pitching the tent, we picked a straight line through the terrain that evenly featured the elements specific to the location. The line would usually cover thin ice, pressure ridges and a vast patch of solid ice. Each line was 400 to 500 metres long and we made a snow thickness reading every few metres. We punched our snow probe through the snow cover until it touched ice. We would read out the thickness, shouting out the depth to the team member writing it down. The third man kept an eye out for polar bears and carried our gun.

How difficult was it to take the measurements?

Although the protocol for collecting snow thickness data is pretty straightforward, it was more demanding than I had anticipated. In the cold days of March with temperatures as low as -37°C it was a challenge to pitch the tent and tempting to go in straight away and light up the stove. Writing down the readings sometimes seemed a little sadomasochistic. Holding a pencil with your mittens while you fingers are completely numb is not a pleasant experience to say the least. But Petter and Doug, my teammates were very committed. We only skipped the procedure a couple times when frostbite started to set in.

CryoSat aims to determine rates of diminishing ice cover, but as a frequent visitor to the Arctic over the last 10 years, what changes to the ice have you personally noticed?

What I seem to have noticed is that there are more frequent but smaller leads (stretches of open water, sometimes covered with very fresh ice). This year we had a lot of 'water skies' around us, which is a haze of steam indicating open water. Despite the low temperatures and even light winds, full moon induced currents ripped everything open. Pressure ridges also occur very frequently but are by far not as extreme as I recall from my expedition in 1997. During any expedition we expect to swim across those small leads in our dry-suits. Sometimes the fresh leads worked in our favour serving as a highway when they were headed north.

How worried are you about receding ice cover?

We have seen a long period where prevailing winds and sea currents wipe away the sea ice and the ice itself seems to be thinning. It is a dangerous combination where natural variations in the regime of mechanical forces on the ice coincide with thermal forcing amplified by global warming. With steadily increasing emissions of greenhouse gasses we are dangerously interfering with a delicate system. And that's the technocratic way of putting it. To me it is not a system – it is nature. And that is something we should not mess about with. So yes, I am worried.

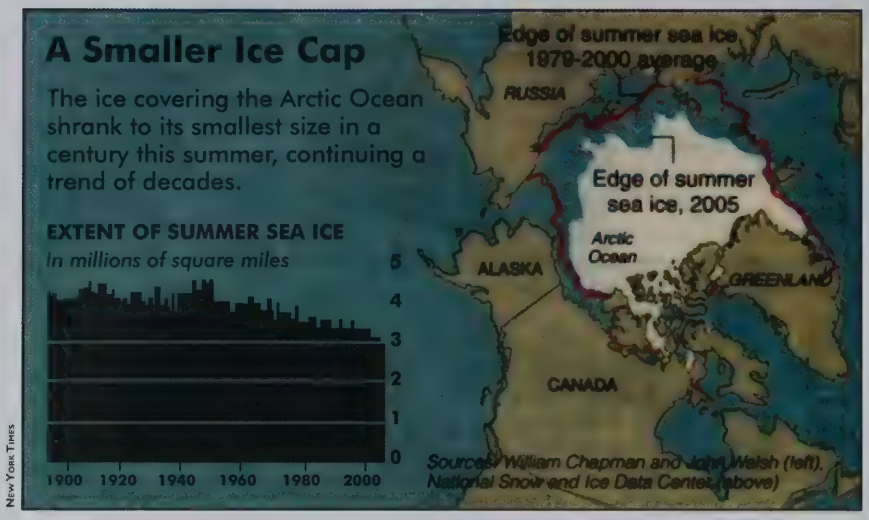
How important a role do you think space missions such as CryoSat play in understanding a changing Earth?

I think it's crucial. The Earth has been, and will always be changing. It's an intrinsic part of nature. But it is our responsibility to be in constant touch with our planet and take responsibility for how we interact with the Earth and make the appropriate decisions.

Do you have plans to lead any future expeditions to the polar regions and if so would you be interested in contributing again to the CryoSat validation effort?

I am currently focusing on the Climate Change College, which offers a select group of young adults the chance to contribute to worldwide and national climate change campaigns for the World Wide Fund for Nature. However, together with ESA's CryoSat Validation Manager Malcolm Davidson we are working out how I can further contribute to the CryoSat validation programme in Greenland. A realistic protocol will be developed in the coming months and part of the plan is to visit other scientists in the field working on the EGIG (Expédition Glaciologique Internationale Groenland) Line, which runs across Greenland's central ice sheet. It was first traversed in 1959 and has been a site for various scientific surveys since. ❑

In a Melting Trend, Less Arctic Ice to Go Around



New York Times, **"International," 29 September 2005, by Andrew C. Revkin**—The floating cap of sea ice on the Arctic Ocean shrank this summer to what is probably its smallest size in at least a century of record keeping, continuing a trend toward less summer ice, a team of climate experts reported yesterday.

That shift is hard to explain without attributing it in part to human-caused global warming, the team's members and other experts on the region said.

The change also appears to be headed toward becoming self-sustaining: the increased open water absorbs solar energy that would otherwise be reflected back into space by bright white ice, said Ted A. Scambos, a scientist at the National Snow and Ice Data Center in Boulder, Colo., which compiled the data along with the National Aeronautics and Space Administration.

"Feedbacks in the system are starting to take hold," Dr. Scambos said.

The data was released on the center's Web site, www.nsidc.org.

The findings are consistent with recent computer simulations showing that a buildup of smokestack and tailpipe emissions of greenhouse gases could lead to a profoundly transformed Arctic later this century, when much of the once ice-locked ocean would routinely become open water in summers.

Expanding areas of open water in the summer could be a boon to whales and cod stocks, and the ice retreat could create summertime shipping shortcuts between the Atlantic and the Pacific.

But a host of troubles lie ahead as well. One of the most important consequences of Arctic warming will be increased flows of meltwater and icebergs from glaciers and ice sheets, and thus an accelerated rise in sea levels, threatening coastal areas. The loss of sea ice could also hurt both polar bears and Eskimo seal hunters.

The Arctic ice cap always grows in the winter and shrinks in the summer. The average minimum area from 1979, when precise satellite mapping began, until 2000 was 2.69 million square miles, similar in size to the contiguous area of the United States. The new summer low, measured on Sept. 19, was 20 percent below that.

This summer was the fourth in a row with the ice cap areas sharply below the long-term average, said Mark C. Serreze, a senior scientist at the snow and ice center and a professor at the University of Colorado, Boulder.

Dr. Scambos said the consecutive reductions in the ice cap "make it pretty certain a long-term decline is under way."

A natural cycle in the polar atmosphere called the Arctic oscillation, which contributed to the reduction in Arctic ice in the past, did not appear to be a factor in the past several years, Dr. Serreze said.

He said the role of accumulating greenhouse gas emissions had become increasingly apparent with rising air and sea temperatures. Still, many scientists say it is not yet possible to determine what portion of Arctic change is being caused by rising levels of carbon dioxide and other emissions from human sources and how much is just climate's usual wiggles.

Dr. Serreze and other scientists said that more variability could lie ahead and that the area of sea ice could actually increase some years. But the scientists have found few hints that other factors, like more Arctic cloudiness in a warming world, will reverse the trend.

"With all that dark open water, you start to see an increase in Arctic Ocean heat storage," Dr. Serreze said. "Come autumn and winter that makes it a lot harder to grow ice, and the next spring you're left with less and thinner ice. And it's easier to lose even more the next year."

The result, he said, is that the Arctic is "becoming a profoundly different place than we grew up thinking about."

Other experts on Arctic ice and climate disagreed on details. For example, Ignatius G. Rigor at the University of Washington said the change was probably linked to a mix of factors, including influences of the atmospheric cycle.

But he agreed with Dr. Serreze that the influence from greenhouse gases had to be involved.

"The global warming idea has to be a good part of the story," Dr. Rigor said. "I think we have a different climate state in the Arctic now. All of these feedbacks are starting to kick in and really snuffing the ice out by the end of summer."

> *"I think we have a different climate state in the Arctic now. All of these feedbacks are starting to kick in and really snuffing the ice out by the end of summer."*

Other experts expressed some caution. Claire L. Parkinson, a sea ice expert at NASA's Goddard Space Flight Center in Greenbelt, Md., said a host of changes in the Arctic—including rising temperatures, melting permafrost and shrinking sea ice—were consistent with human-caused warming. But she emphasized that the complicated system was still far from completely understood.

William L. Chapman, a sea ice researcher at the University of Illinois Urbana-Champaign, said it was important to keep in mind that the size of the ice cap could vary tremendously, in part because of changes in wind patterns, which can cause the ice to heap up against one Arctic shore or drift away from another. ❑

As Polar Ice Turns to Water, Two Ways to Split Up Arctic Ocean Are Offered

Excerpted from an article in the *New York Times*, "As Polar Ice Turns to Water, Dreams of Treasure Abound," CHURCHILL, Manitoba, 10 October 2005, by Clifford Krauss, Steven Lee Myers, Andrew C. Revkin, Simon Romero and Craig Duff—Last year, scientists found tantalizing hints of oil in seabed samples just 200 miles from the North Pole. All told, one quarter of the world's undiscovered oil and gas resources lies in the Arctic, according to the United States Geological Survey.

The polar thaw is also starting to unlock other treasures: lucrative shipping routes, perhaps even the storied Northwest Passage; new cruise ship destinations; and important commercial fisheries.

"It's the positive side of global warming, if there is a positive side," said Ron Lemieux, the transportation minister of Manitoba.

But if the Arctic is no longer a frozen backyard, the fences matter. For now it is not clear where those fences are. Under a treaty called the United Nations Convention on the Law of the Sea, territory is determined by how far a nation's continental shelf extends into the sea. Under the treaty, countries have limited time after ratifying it to map the sea floor and make claims.

The United States, an Arctic nation itself because of Alaska, could also try to expand its territory. But several senators who oppose any possible infringement on American sovereignty have repeatedly blocked ratification of the treaty.

In 2001, Russia made the first move, staking out virtually half the Arctic Ocean, including the North Pole. But after challenges by other nations, including the United States, Russia sought to bolster its claim by sending a research ship north to gather more geographical data. On Aug. 29, it reached the pole without the help of an icebreaker—the first ship ever to do so.

In January, the State Department's Bureau of Intelligence and Research held a closed two-day meeting to hear from experts on the implications of a warming, opening Arctic.

"There are likely to be a number of foreign-policy issues that must be addressed by the United States and other nations" if the climate trends persist, said a summary of the meeting. "These issues include the availability and potential for exploitation of energy, fisheries and other resources; access to new sea routes; new claims under Law of the Sea; national security; and others."

A look at a map of the globe with the North Pole at its center explains why a new frontier matters. Some countries that one might think of as being half a world part appear as startlingly close neighbors, and relatively speaking, they are.

Claims of expanded territory are being pursued the world over, but the Arctic Ocean is where experts foresee the most conflict. Only there do the boundaries of five nations—Russia, Canada, Denmark, Norway and the United States—converge, the way sections of an orange meet at the stem. (The three other Arctic nations, Iceland, Sweden and Finland, do not have coasts on the ocean.)

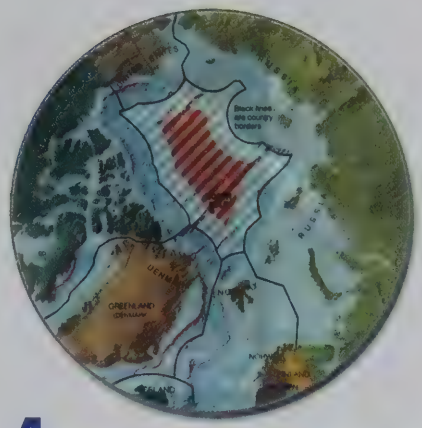
As for Norway, the warming world gives it the chance to seek influence far beyond its size. Energy-hungry countries that might have written off the Arctic not long ago are showing considerable interest in Norway's opening of the Barents; one visitor to Oslo in September was India's oil minister, seeking a role in exploration. And if a route farther north opens just four or five months of the year, Norway could even become a major supplier of oil and gas to China, said Sverre Lodgaard, director of the Norwegian Institute for International Affairs.

Norway is trying to position itself as "a dwarf among giants," Mayor Alf Jakobsen of Hammerfest said. "We're attracting young people to Hammerfest instead of sending them away, for the first time in years. The opportunity to become a springboard into the Arctic is upon us."

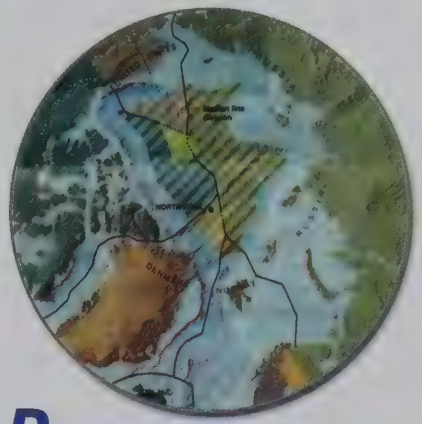
Denmark is particularly interested in proving that a 1,000-mile undersea mountain range, the Lomonosov Ridge, is linked geologically to Greenland, which is semiautonomous Danish territory. If it finds such a link, Denmark could make a case that the North Pole belongs to the Danes, Danish officials have said.

Treaty or no, territorial disputes ultimately imply questions about a country's ability to defend its interests. Here, too, the United States has shown less urgency while Canada has acted more aggressively to ensure sovereignty over a fast-changing domain it had long neglected. ❑

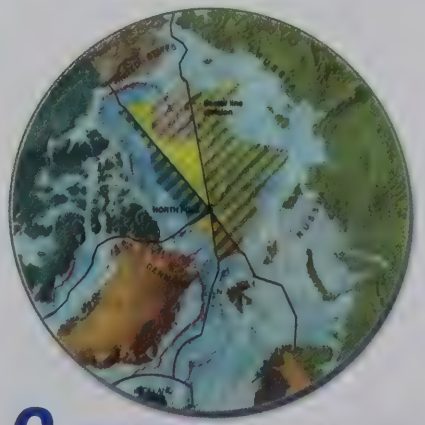
What It Is ... and What It Could Be



A. *What countries have now and what they may claim:* *Coastal countries control the sea 230 miles from their shores.* **Blue-Striped Area:** *not currently part of any country. Nations can make claims in this area, which must then be approved by the United Nations.* **Red-Striped Area:** *For countries to make claims in this area, it must be proven that underwater ridges here are part of a continental shelf, rather than a separate feature of the sea floor.*



B. *Median Line Method:* *The sea would be divided into areas proportional to the amount of coastline a country has.* **Centralized Bright Yellow Striped Area:** *A treat, the Law of the Sea, dictates that countries cannot claim the areas shaded in yellow because the areas lie too far from coasts or continental shelves.*



C. *Sector Method:* *The sea is divided along lines of longitude, with the North Pole as the center. The North Pole would be split among countries.*

David Constantine and Erin Aigner/The New York Times

Arctic Oil and Gas Digest

compiled by Dave Norton, Arctic Editor, with help from Contributing Editors

Unprecedented events between August and October 2005 lead me to preface this "Digest" with remarks on revised realities within which fossil fuel decisions are now being made. Decision-makers may not fully agree that irrevocably altered contexts now shape Arctic energy policies. You may not agree either, but consider…

… Globally, the two months surrounding the September 2005 Equinox were an indelibly wild, tragic and anxious time. I predict that this season will prove a more prominent turning point in U.S. public policies than were the terrorist attacks four years earlier. In the wake of these two months, Congress would no longer dare pass the insipid energy bill that it did earlier this year. The hurricane season that ravaged the Gulf of Mexico coastal zone exposed extreme vulnerabilities in domestic energy supplies. Fuel prices surged, increasing the already exaggerated profits accruing to petroleum corporations. Evacuee highway traffic was gridlocked. FEMA was widely disgraced during a rash of finger-pointing. Search for the guilty eclipsed serious soul-searching. Previously overlooked connections and postponed reckonings were nevertheless starkly illuminated. Suddenly we all seemed caught freeze-framed where warnings intersected like the cross hairs in a rifle's telescopic sight. Many of us sensed that the end of borrowed time was at hand.

Many of us sensed that the end of borrowed time was at hand

Greenhouse gases … peak petroleum … inadequate disaster preparedness … social inequities … pay-backs for years of hopeful procrastinating … ANWR—to drill or to keep as a refuge?… The Arctic and the Gulf of Mexico seemed more closely linked than at any time since the great Interior Seaway provided the Arctic with a supply of subtropically heated seawater in the late Mesozoic, when dinosaurs thrived within 15 degrees of the geographic North Pole.

While Hurricane Katrina was still intensifying some 36 hours before the storm reached New Orleans, I brought our copy of John McPhee's 1989 book, *Control of Nature*, to our grown kids' attention. I hoped they'd read McPhee's vivid alarm over how much of the ground upon which New Orleans was built has now sunk below river and sea levels; that unspeakable tragedy faced this cradle and icon of culture if Mississippi River flooding, a storm surge from the Gulf, or both, should breach the extensive levees keeping water at bay above that city. A series of New Orleans Times-Picayune investigative reports in 2004 updated McPhee's account with the added alarm that funding for the U.S. Army Corps of Engineers' incessant upgrading of these levees had withered within the federal budget since the 2003 invasion of Iraq. These widely published analyses invalidated politicians' post-Katrina claims that experts had not anticipated the breaching of levees protecting the Big Easy.

…Americans' obsession with privileged—if now volatile—prices for a gallon of gasoline is curious, in view of the prices that friends in other nations and in parts of Alaska tolerate. In the wake of recent exposés of the within-Alaska price structure of fuels, and of Hurricane Katrina, advertised pump prices for unleaded gasoline in road-connected parts of Alaska increased so sluggishly as to rank (briefly) lowest in the U.S. That low was an unprecedented event, because urban Alaskans have always paid more for fuels, even with the negligible state taxes they are assessed. Back in the early 1960s when I started to emigrate here from Massachusetts, I astonished my family by recounting that in Fairbanks a loaf of bread, a dozen eggs, a quart of milk and a gallon of gasoline each cost about 60 cents. At that time, motorists in New England were paying less than half that price for a gallon of gasoline.

Heating oil in some villages in rural Alaska was reported to be selling at $8.00 per gallon.

…The volatility and spatial variability of energy pricing within Alaska is far more complex than the single ephemeral statistic of pump gas being the cheapest in the nation. Two refineries, one adjacent to Fairbanks and the other about 2 hours south of Anchorage, produce fuels sold within the road-connected central parts of the state. Proximity to that supply and low state fuel taxes helped blunt the spike that pushed pump prices above $3.00 in most states soon after Hurricane Katrina. By September Equinox 2005, Fairbanks pump prices were still rising at $2.75, while many pump prices in smaller states had soared 50 cents above, then fallen back below that value. Anchorage motorists, farther from refineries, are both more numerous and closer to Seattle than Fairbanks motorists. Retailers like Fred Meyer and Safeway import gasoline from Seattle and sell it for as slim a margin as possible to undercut locally refined gasoline, so whether the trend is up or downward, Anchorites pay 10-25 cents less per gallon than Fairbanksans. As you can imagine, it infuriates Fairbanksans to believe that they subsidise retailers' costs of taking locally refined gasoline from here into the Anchorage bowl, where they sell it for less.

Inequities in energy costs around roadless parts of Alaska (and around the Arctic in general) dwarf these minor differences among urban prices and markets. Before Katrina, gasoline for airplanes and outboard engines on Alaska's North Slope cost $3.78 a gallon at Barrow where it arrives by annual sealift barge. At Umiat, where all fuels are flown in, a gallon cost $6.00 before Katrina. Barrow prices could well jump to $5.00, and Umiat's to perhaps more than $10.00 per gallon next year. Bear in mind that these price ranges are found within a few hundred km of the Prudhoe Bay Oil fields and the industry's local topping plant on the North Slope. At the end of October 2005 it cost $6.00 per gallon to fill a snow machine tank in Nuiqsut, a village from which you can see (about 12 km away) the western-most drill rigs feeding oil through the Prudhoe Bay fields to the Trans-Alaska Oil Pipeline. Heating oil in some villages in rural Alaska was reported to be selling at $8.00 per gallon at the same time.

Will people desert rural Alaska as energy there becomes unaffordable?

It is hard to stay informed of the inequities by which rural Alaskans face gasoline costs that would make even British motorists hesitate to "fill 'er up." Various Internet URLs track retail gasoline prices in all 50 U.S. states, but I have not found Web sources for rural Alaska energy costs. Rural Alaska residents could be forgiven for feeling as overlooked as New Orleanians from the Lower Ninth Ward. Without the steady supply of petroleum products upon which they grew dependent by mid 20th century, home heating, electricity, transportation of goods into villages, and their ability to sustain themselves by hunting and fishing are in jeopardy. Analysts try to predict the retail prices that will cause Americans to abandon gas-guzzling SUVs. The counterpart question in Alaska and other parts of the Far North is whether fuel-economical designs for boat engines, snow machines, four-wheelers, and generators of electricity will be available in time to forestall a return to sled dogs and other non-petroleum sources of energy. Can small engines be modified to run from cylinders of compressed natural gas, for example? Or will people desert rural Alaska as energy there becomes unaffordable?

One article in this "Digest" (see page 29) examines aspects of the plight of Alaska's supposedly wealthy North Slope Borough. While the petroleum companies enjoy enormous profits, this Oregon-sized borough (equivalent to a county government in most smaller states) lives by taxing real property—not income—in the oil patch. The petroleum industry's frugality in recycling buildings and machinery has so de-valued its ageing property that its contribution to the municipal tax stream has declined, and the heyday of the North Slope Borough is a memory.

Other rural Alaska residents may further empathize with New Orleanians, whose mayor had to terminate 3,000 city employees in the first days of October 2005. A score of rural municipal governments in Alaska have dismissed employees (including police and fire protection, in these cases) and closed their doors in the past two years. Unlike the North Slope Borough, these communities generally lacked even a frugal taxable industry within their boundaries. Falling behind in paying heating and other utility bills was often the first symptom of municipal distress. Energy prices are sensitive predictors. Fiscally conservative Alaska State legislators in recent years have cut municipal assistance along with state subsidies for conservatives' favourite targets, such as Public Broadcasting and public higher education. The Legislature has also threatened to fund government operations by raiding the State's decades-old public savings account, the Permanent Fund. Ironically, Alaska State government is currently awash in an anticipated $1.5 billion surplus arising from the surge in the market value of its royalty share of crude oil. Market prices have surged from below the break-even price of about $28 to more than $60 per barrel.

A score of rural municipal governments in Alaska have … closed their doors in the past two years.

A visual affirmation of the disjointed human geography of Alaska—and indeed of the whole world—accompanies Richard Florida's article, "The world is spiky," in the October 2005 issue of *The Atlantic* (pp. 48-51). He highlights four graphic depictions of the world—where its population centres are found, where artificial light emissions detected from orbiting satellites are concentrated, where innovations cluster (in the form of patents registered), and where the research centres produce the most frequently quoted original publications. Of these four, only the map of light emissions succeeds in registering any spike from Alaska (or anywhere else within the Arctic Circle except Murmansk on the Kola Peninsula of Russia). In the light emission map of the world, Alaska contributes five visible spikes, south-to-north: the Kenai Peninsula oil fields and refinery, the City of Anchorage, the City of Fairbanks, and two peaks from the oil fields surrounding Prudhoe Bay. The article's subtitle is apt: "Globalization has changed the economic playing field, but hasn't levelled it."

On the 4th of October 2005, two commercial announcements made local headlines. Wal-Mart will build a second, larger, box store in Fairbanks. Perhaps the corporation decided that locally-owned businesses were not failing fast enough under the onslaught of Chinese manufactured goods

(CONTINUED AT BOTTOM RIGHT)

Wishful Thinking Vs. Real Thought

FAIRBANKS, 19 September 2005, by Paul Laird—Wishful thinking says we can build a pipeline to Valdez to sell liquefied natural gas to the West Coast; real thought tells us the sheer volumes of LNG that would be required in order to make a project economic would depress prices in West Coast markets and undermine the economic viability of the project.

> *If we really want an all-Alaska line, we're going to have to mortgage Alaska's future in order to build it.*

Wishful thinking says Alaskan LNG can be marketed in Pacific Rim countries; real thought says there's already an abundance of less expensive LNG from closer sources, ones that don't require a multibillion-dollar pipeline to reach tidewater.

Wishful thinking says we can tax a gas project into reality; real thought says we'll only succeed in making Alaska an even less attractive place to invest, not only for gas commercialization, but also for any world-class resource-development project that's subject to the vagaries of state tax policy. It will harm long-term production and eliminate private-sector job and business opportunities for Alaskans, only to pump more money in the short term into a bulging state bureaucracy.

Wishful thinking says a pipeline project is economically viable already and doesn't need fiscal terms for gas and oil that are lucid and lasting in order to proceed; real thought says that's an easy conclusion to reach when it's someone else's money, you aren't the one taking the risks on costs, and you haven't been burned before when the state changed the rules after you made an investment.

Wishful thinking says Alaskans are entitled to whatever we want in terms of a gas project and won't have to assume any of the responsibility or risk ourselves, that we can finance and build an "all-Alaska" pipeline without putting any of our assets like the Alaska Permanent Fund at risk; real thought tells us no investment bank is going to support a 100 percent debt-financed project the size of a North Slope gas pipeline. If we really want an all-Alaska line, we're going to have to mortgage Alaska's future in order to build it.

Wishful thinking says we can trust the government to build and operate a gas project; real thought—along with an empty grain silo in Valdez, a failed fish-processing facility in South Anchorage and fallow farmland at Point MacKenzie—suggests otherwise.

Wishful thinking says Alaskans can control their own destiny and won't have to depend on Canada if an all-Alaska line is built; forget real thought, even proponents of an all-Alaska route now say LNG exports to Canada are the catalyst to their project (the latest version).

Wishful thinking says there will be more jobs for Alaskans with an all-Alaska route; real thought says there will be a surplus of jobs for skilled Alaskans regardless of which project prevails.

Wishful thinking says we'll get a better deal if we hold out once the one(s) being negotiated by the governor are finalized (never mind that we don't even know the terms); real thought suggests that once negotiations yield an agreement, it just might be the best prospect for a gas project that many of us will live to see. At best, holding out for something "better" will result in years of delays ... and at worst, in no project at all.

> *At best, holding out for something "better" will result in years of delays ... and at worst, in no project at all.*

Wishful thinking says we can trust politicians who say an all-Alaska pipeline is the only acceptable option because it's best for Alaskans; real thought says that while political posturing may be best for them, what's really best for us are new jobs, new business opportunities and a reliable new source of long-term revenues and gas supplies for Alaska's communities.

And those will come only through a project with the potential to actually be built. ❑

Paul Laird is general manager of the Alaska Support Industry Alliance, a trade organization representing 400 companies and professionals that provide goods and services to the oil, gas and minerals industries.

Find more stories on this topic beginning on page 27

(CONTINUED FROM BOTTOM LEFT

spewing from the first Wal-Mart that opened in April 2004. The second announcement was inauguration of an advertising campaign by the Alaska travel industry. Billboards in more populous states will portray a mock Alaska vehicle tag (in the style of a "vanity" plate) unsubtly reminding potential visitors that their biological clocks are ticking: "Alaska, B4UDIE."

The rest of the articles reprinted in this "Digest" are meant to capture the cacophony of contradictory public pronouncements and policies connected to Arctic energy that characterized the watershed of the 2005 hurricane season. Although there were some gratifying responses to the wake-up by natural disasters, other questions, connections and ironies magnified by the hurricanes remained unexamined. As Sam Bishop recounts (p. 27), increasing the output of crude and refined petroleum products from Alaska is unrealistic, in both the short term and long term outlook. Predictably, Alaska Governor Frank Murkowski's request for increased short-term output from Alaska petroleum producers was politely rebuffed. The various machinations around Alaska's political scene to hasten construction of an All-Alaska (as opposed to Alaska-Canada) natural gas pipeline are portrayed as being heavily based on politicians' "wishful thinking" in the editorial by Paul Laird (p. 25, above). Natural gas prices are even more volatile than those for heating oil. Laird addresses what I've long considered to be Alaska's most salient nationally visible weakness, namely the capacity of some of its public figures for self-deception.

The reaction by Alaska's lone House member to criticism of his transportation committee's bill appropriating hundreds of millions for two Alaska road bridges is documented in Liz Ruskin's column (p. 27) for the *Anchorage Daily News*. In fairness, she also revisited Congressman Young's scepticism about folding FEMA into the Department of Homeland Security, with words that in retrospect make Rep. Don Young R-Alaska sound prophetic. Sen. Lisa Murkowski, R-Alaska expressed contempt for opponents of drilling in ANWR in one story ("Young Scoffs..." p. 27), followed by elation at the post-Katrina swing of public opinion toward opening the refuge to drilling that the Pew Public Opinion Research Centre reported (p. 28). Staunch opponents to drilling in ANWR nevertheless mobilized from Alaska, Canada and the contiguous U.S. to discourage opening ANWR.

Although it was too lengthy to reproduce in this Digest, a news dispatch datelined Fairbanks 13th October reported a sharp drop of enrolments in college courses by rural Alaska students in the Fall 2005 semester. University administrators' best explanation for this decline throughout western and northern parts of the state was the daunting cost of fuel for local transportation to physical classrooms at campuses and learning centres in rural Alaska. To some extent, students appeared to be choosing Web-based courses; tentatively consider this another symptom of the energy pricing squeeze.

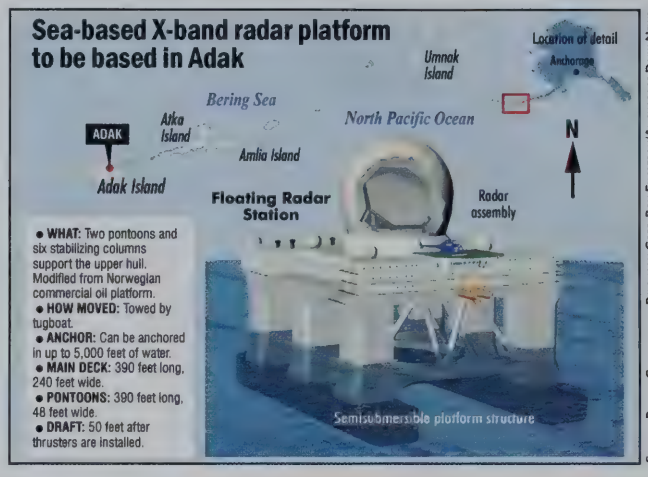
Should Arctic natural gas pipelining and drilling in ANWR appear more likely in coming months, I hope that this column sensitises readers to wondering whether and how energy decisions affect residents of rural Alaska, especially subsistence hunters and fishers. Whether such energy decisions further exemplify our fractured northern human geography, or are seen as disregard for first Alaskans, let's hope that the mock licence plate on billboards aimed at tourists won't have to be amended to read, "Alaska, B4ITDIES." ❑

Floating Radar Station Prepares To Sail For Adak

X-BAND: Remodeled oil platform is part of the missile defense program.

***Anchorage Daily News*, 1 August 2005, by Paula Dobbyn**—A massive floating radar station that detects enemy missiles will sail soon to Adak, a remote island in the Aleutian chain owned in part by a regional Native corporation. The $815 million X-band radar platform is a key part of the Bush administration's multibillion-dollar missile defense program.

The sea-based radar platform—the only one of its kind in the world—was assembled in Texas by defense contractors Boeing and Raytheon. The self-propelled station sits 21 stories high and is as wide as a football field, rendering it too gigantic to squeeze through the Panama Canal, according to Boeing publicity materials.


Sea-based X-band radar platform to be based in Adak
Location of detail
Umnak Island
Anchorage
Bering Sea
North Pacific Ocean
ADAK
Atka Island
Amlia Island
Adak Island
N
Floating Radar Station
Radar assembly
• WHAT: Two pontoons and six stabilizing columns support the upper hull. Modified from Norwegian commercial oil platform.
• HOW MOVED: Towed by tugboat.
• ANCHOR: Can be anchored in up to 5,000 feet of water.
• MAIN DECK: 390 feet long, 240 feet wide.
• PONTOONS: 390 feet long, 48 feet wide.
• DRAFT: 50 feet after thrusters are installed.
Semisubmersible platform structure
SOURCE: BOEING CORPORATION, RAYTHEON CORP. RON ENGSTROM/ANCHORAGE DAILY NEWS

The converted oil platform with a space-age looking dome atop will take the long route, rounding South America and heading to Hawaii before reaching Adak by Christmas or early next year.

When it reaches Adak, 1,200 miles southwest of Anchorage, the radar station will float just off the town, a former naval station that Aleut Corp. is redeveloping into a residential community and fishing port. The X-band radar will be linked to missile interceptors buried in underground silos at Fort Greely, near Delta Junction, and at Vandenberg Air Force Base in California.

Dave Jensen, chief executive of Anchorage-based Aleut Corp., which owns a chunk of Adak, flew to Corpus Christi, Texas, last week for the official christening of the radar platform.

Aleut Corp. successfully bid to have the X-band stationed at Adak, beating out Vandenberg as well as companies in Everett, Wash., and Honolulu, said Curtis Smith, a spokesman for the company. Jensen said Aleut's success in getting the X-band marks a milestone, not just for his company or Adak but for the state.

"This is a monster project for Alaska," Jensen said.

The radar and the business it will spawn are a big step for Adak's redevelopment and economy, Jensen said. Up to 100 people will work inside the massive structure, all of whom will need to go ashore from time to time for goods, services and recreation.

"People will be going to the pub and the pizzeria," he said.

The Aleut Corp. and its subsidiaries expect to play a support role for the station, he said.

Aleut Technologies, a subsidiary, won a contract with Boeing to operate a huge tugboat, the Dove, that will move fuel and supplies between Adak and the X-band station year-round. The Dove and its 17 crew members will be stationed at one of Adak's docks, next to a fish plant operated by Adak Fisheries, Jensen said.

> *"This is a monster project for Alaska. The radar and the business it will spawn are a big step for Adak's redevelopment and economy."*

Aleut Corp., representing more than 3,000 Native shareholders with ties to the Aleutian Islands, acquired Adak from the federal government in March 2004 under a land trade. The company makes money from fuel sales, seafood processing, real estate and government contracting. It expects to post a record profit of nearly $11 million in 2005 once auditors sign off on the final numbers, Jensen said.

Chris Taylor, a spokesman for the Pentagon's Missile Defense Agency, said the X-band radar has undergone sea trials and may participate in missile flight tests after the platform leaves Corpus Christi, sometime in the next few weeks. The agency isn't releasing the exact date for security reasons, he said.

X-band refers to the radio frequency range the radar platform uses.

The high-powered radar is designed to detect incoming enemy ballistic missiles. It's supposed to relay tracking information to ground-based interceptor missiles at Fort Greely and Vandenberg Air Force Base, Taylor said. In case an enemy warhead rockets toward the United States, the interceptors are designed to shoot them down.

The X-band system is powerful enough that if it were stationed in San Francisco Bay and someone hit a baseball out of New York's Yankee Stadium into space, the radar could not only see the ball but track its revolutions, according to Boeing.

While Adak will be the X-band's home port, the radar station is capable of moving anywhere in the Pacific Ocean, according to Boeing Co.

The station is an integral component of President Bush's controversial missile defense program, which aims to protect the United States from limited ballistic missile attacks launched by terrorists or rogue states.

Critics, including the Union of Concerned Scientists, have described the program as a $53 billion boondoggle that will do little to increase the nation's security. Some say it's wracked with too many technological challenges. Others say terrorists are more likely to use suicide bombers than ballistic missiles.

The missile defense program was started during the Reagan era. Then the space-based approach was commonly known as Star Wars. Since then, the federal government has spent nearly $100 billion to protect the country from missile attacks. After taking office in 2001, Bush withdrew from the Anti-Ballistic Missile Treaty. The next year he directed the Pentagon to ramp up a ground-based missile defense program.

Missile defense is a major part of the administration's national security policy. But recent flight tests have not been successful. In December and February, mock enemy rockets were fired from the Kodiak Launch Complex on Kodiak Island. Problems occurred with the interceptors both times, and the tests failed.

Daily News reporter Paula Dobbyn can be reached at pdobbyn@adn.com or 257-4317. ❑

MORE ARCTIC OIL & GAS DIGEST

Young Scoffs At Criticism of Bridges

Millions: Despite relief effort, money will remain

Anchorage Daily News*, 20 Sept. 2005 by Liz Ruskin**—[Quoting] ***The New York Times: "Surely Rep. Don Young, the Alaska Republican who is chairman of the transportation committee, might put off that $223 million 'bridge to nowhere' in his state's outback. It's redundant now—Louisiana suddenly has several bridges to nowhere."

[Quoting] ***The Wall Street Journal***: "That same half a billion dollars (for the two Alaska bridges) could rebuild thousands of homes for suffering New Orleans evacuees."

No doubt to make Alaskans look bad, city leaders in Bozeman, Mont., are investigating whether they can give Katrina victims the $4 million they got in the federal bill for a downtown parking garage.

Sen. John McCain, R-Ariz., raised the charitable pork idea on the Senate floor last week, although he stopped short of endorsing it.

So, how about it, Mr. Chairman?

"They can kiss my ear!" Young boomed when Sam Bishop, Washington correspondent for the *Fairbanks Daily News-Miner*, asked him about the many pleas to redirect the bridge money.

"That is the dumbest thing I've ever heard," Young went on, noting that Louisiana did quite well in his highway bill.

And, the congressman said, he helped the seafood industry donate more than $500,000 for hurricane victims. (That was at the "Seafood Invitational," a charity golf tournament Sept. 9 in Roslyn, Wash., Bishop reported Friday.)

"I raised enough money to give back to them voluntarily," he said, "and that's it!"

Accurate FEMA Prediction

Katrina, to understate it, was a disaster for the Federal Emergency Management Agency.

In an interview with The New York Times last week, just-resigned FEMA director Michael Brown told of frantic calls he made to the homeland security secretary and the White House, complaining over and over that he couldn't "get a unified command established" as the storm was bearing down. He said he was hobbled by the limitations on FEMA's power, according to the Times.

And who knew that was going to happen? Alaska Congressman Don Young.

When the Homeland Security Department was created in 2002, Young warned that burying FEMA in the big department would hurt its ability to respond to natural disasters, because Homeland Security is focused on terrorism.

"If FEMA becomes part of the Department of Homeland Security, what will happen to these other important functions?" Young asked fellow Congress members back then. "Will Homeland Security continue to provide disaster relief for hurricanes in the Gulf of Mexico ...?? Will they have time to provide accurate flood maps and work with homeowners to mitigate against future flood losses?"

Young was criticized at the time for being territorial—for trying to keep FEMA out of the new department so he, as chairman of the Transportation Committee, could continue to exercise control over it. He said he just wanted to make sure FEMA, which used to be a Cabinet-level agency, kept its clout and focus.

"There is tremendous concern that the (Homeland Security) bill as introduced will create a great deal of bureaucratic chaos and inaction," he said at the time.

Rallying the Troops

Environmentalists, Native Americans and green-leaning clergy are amassing in Washington this week to tell Congress not to drill in the Arctic National Wildlife Refuge. "Arctic Refuge Action Day" was scheduled to coincide with Congress' consideration of the issue, but lawmakers have put it off until next month. Still, the anti-drilling lobby is expecting a big turnout—some say 5,000 people—at Tuesday's event in front of the Capitol. Organizers are promising the media good visuals including banners, people carrying signs, a drum procession and, they said in their announcement, "people in polar bear suits."

Sen. Lisa Murkowski, R-Alaska, said she doesn't expect to hear anything new.

Washington notes takes a periodic look at Alaska people and topics in the capital. It is compiled by *Daily News* reporter Liz Ruskin. She can be reached at lruskin@adn.com. ❑

MORE ARCTIC OIL & GAS DIGEST

Oil Companies Say Production Can't Be Increased

***News-Miner*, WASHINGTON, 20 September 2005, by Sam Bishop**—Gov. Frank Murkowski has released letters from three of Alaska's major oil producers responding to his call for more oil production in the wake of Hurricane Katrina. The producers, in letters written Sept. 12, all politely said they already are doing all they can.

John Zager, a manager for Chevron's Cook Inlet operations, said he requested a quick review of alternatives in that area.

"However, I do not believe there is a way to increase production significantly in the next couple of weeks," he said.

"I applaud your efforts to do everything possible to support the energy needs of our state and country in this difficult time," Zager said.

Maureen Johnson and Bernard Looney, BP Exploration (Alaska) Inc. vice presidents, listed several ongoing efforts by the company to expand production at Prudhoe Bay and the Northstar field.

They said timely approval by state agencies could help start production of an additional 5,000 barrels per day from wells in the Niakuk area.

The GC-2 major processing facility at Prudhoe Bay is down for scheduled work, they noted, and production will rise by 80,000 barrels per day when it starts up again. But that "will not be counted as enhancement," they said.

"Thank you for your opportunity to comment as we continue to identify opportunities to enhance Alaska's contribution to the nation's energy supply," they said.

Terrence Lucht, a ConocoPhillips acting vice president, said his company would add 5,000 barrels per day of production from the Kuparuk, West Sak and Alpine fields in the next several weeks as previously scheduled expansion work is completed.

The company has already boosted drilling in the Kuparuk area by 60 percent from last year, he said.

And it will review maintenance plans at Kuparuk and Alpine to make sure they minimize production losses, he said.

"We have taken a hard look at our operations," Lucht said, "and we believe production increases at Alpine and Kuparuk, in excess of the amounts we have described above and within the time horizon you have identified, cannot be achieved without violating current laws and regulations established to protect the environment, avoid waste of natural resources and ensure worker safety." ❑

Washington, D.C., reporter Sam Bishop can be reached at (202) 662-8721 or sbishop@newsminer.com.

MORE ARCTIC OIL & GAS DIGEST

New Poll Shows Public Support Growing To Open Arctic Coastal Plain to Oil & Gas Development

Office of Sen. Lisa Murkowski. WASHINGTON, D.C., 20 September 2005—Saying Americans increasingly understand the nation's need for more domestic production of oil and natural gas after seeing the price aftermath of Hurricane Katrina, Alaska Sen. Lisa Murkowski said she is certain Congress will follow suit and vote to open the Arctic coastal plain to environmentally sensitive oil and gas development later this fall.

Citing a Pew Research Center for the People & the Press national public opinion poll that was released last Thursday afternoon, Murkowski said that, "Americans today clearly favor opening the coastal plain of the Arctic National Wildlife Refuge to oil and gas development."

"The survey finds that the rise in energy prices also has had a modest but perceptible impact on public views of the trade-off between boosting the energy supply and protecting the environment. A solid majority (57%) now says it is more important to develop new energy sources than to protect the environment, up from 49% who expressed that view in March. Support for oil and gas drilling in the Alaskan Arctic National Wildlife Refuge also has gained," said Andrew, Kohut, director of the Pew Research Center in a release on his latest poll.

According to his poll, support for ANWR development had risen 8 percent in the past six months to 50 percent of the public, Americans supporting ANWR 50-42% in the most recent poll conducted between Sept. 8-11 and sporting a margin of error of +/-3%. Support for drilling gained most among Democrats, rising 13% during the past six months, according to the Pew study.

> *"We are gradually cutting through the misinformation and misrepresentations about ANWR. The American public is seeing first hand why it is important that we have a balanced energy policy...."*

Murkowski said support for ANWR's opening has been growing nearly daily in recent weeks. She welcomed the support last week from the Air Transport Association (the industry representatives of Unites States airlines that urged ANWR to be opened to help cut future aviation fuel prices).

"We are gradually cutting through the misinformation and misrepresentations about ANWR. The American public is seeing first hand why it is important that we have a balanced energy policy where we both produce more fuel domestically at the same time that we work to increase conservation and promote alternative and renewable energy sources. We need both savings and production to make energy affordable for Americans in the years ahead," said Murkowski, who stressed that ANWR and its up to 16 billion barrels of economically recoverable oil can be opened without harm to Alaska's wildlife or its environment.

"Opening ANWR is not an either, or proposition. Modern drilling technology, directional and extended reach drilling, the use of ice roads for exploration, new pipeline technology and reduced well-pad sizes all guarantee that we can allow oil development without directly impacting more than 2,000 acres out of the 19 million acres of the refuge. We have proof that development can occur safely. Gradually the American people are getting our message," said Murkowski.

Markup of a measure to open ANWR to oil development has been delayed because of Hurricane Katrina relief efforts until mid to late October, according to information provided by Murkowski. ❑

MORE ARCTIC OIL & GAS DIGEST

Canadians Join Rally Against Arctic Oil Drilling

***Canadian Press*, WASHINGTON, 20 September 2005, by Beth Gorham**—Canadians joined U.S. political heavyweights at a Capitol Hill rally Tuesday to oppose drilling for oil in the Arctic refuge, blasting supporters for exploiting high gas prices and fears of shortages unleashed by hurricane Katrina.

Congress is due to vote next month on drilling in the vast refuge and approval requires just a 50 percent majority so environmental groups and politicians on both sides of the border are racing to persuade Republicans they'd be making a huge mistake.

"It makes no sense to respond to a disaster in the Gulf by making a disaster in Alaska," said Senator Hillary Rodham Clinton.

"Yet that is exactly what so many in Congress want to do."

Besides, said Senator John Kerry, who lost to President George W. Bush in last year's election, Arctic oil reserves would barely put a dent in the U.S. dependence on foreign oil.

"It's like taking a cup of water, pouring it into the ocean and pretending you're raising the tide," Kerry told thousands of anti-drilling activists, including some dressed like polar bears who fanned themselves in blistering heat.

Canada has always opposed drilling in the 7.7-million-hectare park, saying it would disrupt the calving grounds of the Porcupine caribou herd. The migrating herd is a food staple for the Gwich'in First Nation in Alaska and Yukon.

"They cross literally through our backyards twice a year," said Kim Blake, an aboriginal from Crow Foot in Yukon, who made the long trip for the rally with a dozen others.

"That's how we live. That's where we get our food, our clothes and tools."

Larry Bagnell, parliamentary secretary to Canada's Natural Resources minister, said the survival of an entire culture depends on that herd of some 125,000.

"If people drove their cars a little bit less...we wouldn't need drilling at all. It's not that critical for anyone's survival."

"There's a lot of capacity around the world."

There's enough oil and gas in the refuge to serve the United States for about 16 months, the U.S. Geological Survey said, with estimates of 10.4 billion barrels.

While it may not seem like a lot to some, Katrina's devastating impact on Gulf Coast pipelines and the resulting surge in gas prices has some Americans switching to support for drilling.

One recent survey suggested 60 per cent now approve of opening the refuge, up almost 20 percentage points from a similar poll in March.

"It's a very emotional time and we respect that," said Arthur Mitchell, Yukon's Liberal leader.

"But it's being abused by the oil lobby and proponents of drilling to try to get the legislation through a back door."

A major energy bill passed by Congress in July didn't include Arctic refuge drilling.

But Congress inserted the issue into a budget bill that will be voted on next month and doesn't allow for any stalling tactics.

Those kind of bills are often loaded with more contentious policies that likely wouldn't pass on their own.

Bagnell predicts that opinion is almost evenly split and those who want to protect the refuge could still win the day.

"We just need one or two senators to change their minds, or about three in the House," he said.

"This is a very, very close vote."

Prime Minister Paul Martin has discussed the issue with Bush, a strong defender of drilling. Martin said last month Canada wouldn't give up and cabinet ministers would keep lobbying south of the border.

Canada has pointed out a 1987 Canada-U.S. agreement states the two countries are supposed to refrain from any activities that could damage the herd or its habitat.

Advocates of drilling said it would include just a small portion of the refuge and wouldn't damage the environment, caribou or other animal species. ❑

MORE ARCTIC OIL & GAS DIGEST

North Slope Borough Tightens Belt As Oil Revenues Fall

Associated Press, **BARROW, Alaska, 25 September 2005, by Rachel D'Oro**—Buses sit idle inside a garage, gathering dust, their only purpose these days to serve as makeshift storage bins for Alaska's largest regional government.

The seven buses once ferried residents around Barrow, the most populated community in the sprawling North Slope Borough with 4,500 people. In their heyday, the buses ran 16 hours a day, seven days a week. They were equipped with monitors that allowed riders to check their TVs at home for the precise locations of the vehicles instead of waiting in the subzero temperatures that grip the nation's northernmost town, where polar bears are known to wander and the sun doesn't rise for two months in winter.

But the borough, once flush with oil wealth, is increasingly pinching revenues. Its industrial property tax base includes the North Slope oil fields and northern segments of the trans-Alaska oil pipeline. But officials say depreciating oil property values have chipped away at borough coffers at a rate of $6 million a year - and those losses must be countered with budget reductions.

"There's this perception that the roads are paved in gold here and that we have plenty of money," said Dennis Packer, the borough's chief of staff. "A lot of people don't believe there's no money and that's unfortunate. But it's pretty straightforward."

Oil and gas properties account for 97 percent of the borough's property tax base, and brought in $161 million last year. The tax base is currently assessed at $10.2 billion, a $1.9 billion decline from its peak eight years ago, said John Ames, the borough's chief financial officer.

And much of the shrinking revenue is quickly absorbed in running eight communities not linked by roads in the 88,800-square-mile jurisdiction, an area almost the size of Oregon.

Borough villages were mired in third-world conditions when oil industry taxes started coming in three decades ago, and much of that bounty was spent on providing basic amenities, such as power and plumbing, according to Packer.

Even after the money began to flow, luxury wasn't the word normally used to describe conditions in Barrow, where a collection of utilitarian commercial buildings and many ramshackle houses line up along trash-strewn streets. Many residents in this Arctic Ocean community hunt and fish for much of their food, including whale, seal and caribou, so it's not unusual to see fresh kills stacked alongside four-wheelers in front of homes.

But subsistence hunting won't solve public sector financial problems, and borough officials were left with tough choices.

In the most dramatic cut this summer to slash costs, officials shut down Barrow's public transit system, stranding many poor and elderly residents in the 18.4-square-mile community, which is separated in two by a large lagoon.

Packer said the borough is working with Barrow officials to find an alternative system, such as a private shuttle service.

> *The borough's financial problems won't be solved by crude selling at record levels since it reaps no benefit from the oil itself. Instead, the borough only is allowed to tap the aging industry properties—wells, production buildings, a network of pipelines in Prudhoe Bay and other fields—to bring in tax revenue.*

Whenever that happens won't be soon enough for Joe and Mary Jane Ahkivgak, who relied on the buses to get them and their four sons around town. The family can't afford a car or cheaper forms of common Alaska village transportation such an all-terrain vehicle or a snowmobile, Joe Ahkivgak said.

"There's been a lot of walking so far," he said.

When bone-chilling winter arrives in coming weeks, the couple may have no choice but to resort to taxicabs, which charge a flat fee of a few dollars.

Borough officials say bus ridership was low and brought in only $30,000 annually, far short of the $700,000 cost of maintenance and operations of the 20-year-old public transit system. It no longer makes sense to supplement such a cash drain, particularly when costs for necessities like municipal insurance and the diesel fueling village power plants are skyrocketing, officials said.

"We had to take a really hard look at transit, something that's not mandated, but optional," Ames said.

Proposed oil developments and the possibility of building a natural gas pipeline could bode well in coming years, borough officials said. But unrealized plans don't pay today's bills.

"We can't change the way we do business now," Ames said.

Downsizing throughout the region began in earnest three years ago, resulting in layoffs, merging departments, unloading residential rental properties, phasing out borough assisted care facilities, and scrapping small buses operating in villages.

One of the few museums in an Alaska Native village also faces uncertain future funding. Annual borough contributions to the Simon Paneak Memorial Museum in the Brooks Range village of Anaktuvuk Pass, about 250 miles southeast of Barrow, have shrunk by a third, from $160,000 in 2002 to the current funding of $105,000.

Closing is not an option for the community of 320 people, the last remaining settlement of inland Inupiat Eskimos with a rich culture and history to share, said curator Grant Spearman, who has managed the small museum since it opened in 1986.

So he's set up an endowment fund to create a museum foundation. The goal is to raise $3 million, an amount that can keep operations running in perpetuity.

"We know we can't be funded by the borough indefinitely," Spearman said. ❑

✠

On the Net: **North Slope Borough**—http://www.north-slope.org; **Simon Paneak Memorial Museum:** http://www.north-slope.org/nsb/55.htm

'POLAR NEWS'

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A counterpart of our newsletter, entitled *Polar News*, is issued by the Polar Documentation Center, a nongovernmental organization in Rome, Italy. American Polar Society has an exchange agreement with its editor for us to receive its 11-times-a-year newsletter for *The Polar Times*. *Polar News* is already received in hard copy and is accessed at the Byrd Polar Research Center in Columbus, Ohio. It is also available on the publication's web site at http://www.fly.to/polarnews. The content is bilingual, consisting of mainly news accounts in Italian and English. ❑

Satellite for Studying Global Warming Crashes Into Arctic

***www.Earthtimes.org Online*, 9 October 2005, by Philip Green**—CryoSat, a European satellite launched to study the phenomenon of global warming, crashed into the Arctic Ocean on Saturday after its launcher malfunctioned, the European Space Agency (ESA) said. The satellite, which was built over a period of six years, was meant to study the thickness of polar ice sheets and the speed of their melting. It was the first of the six 'Earth Explorer' satellites that constituted a program to study major environmental challenges facing Earth.

On Saturday at 1500 GMT, the CryoSat satellite was launched from Russia's Plesetsk Cosmodrome atop Rokot, a SS-19-ballistic-missile-turned-launcher. However, one stage of the rocket's booster system malfunctioned, resulting in the satellite crashing.

"The booster unit did not switch on and it resulted in the failure of the satellite to reach orbit. The remnants of the satellite have fallen into the northern Arctic Sea," said Vyacheslav Davydenko, a Russian Federal Space Agency spokesman. Earlier, when scientists monitoring the satellite couldn't receive data from CryoSat, they thought it had wandered off into an orbit different from the one it was supposed to enter. However, it was later understood that the second stage failed to separate from the third stage of the satellite and the malfunction occurred.

"The confirmation we have is that there has been a failure and that ... the satellite with part of the launcher has fallen into the sea," said Franco Bonacina, a spokesman for the ESA. CryoSat, which weighed 1,564 pound, was built at the cost of about US $170 million. It was equipped with a hi-tech radar altimeter capable of measuring the height and angle of the polar ice sheets accurately. The measurements of the radar altimeter were to evaluate if the changes occurring in the ice sheets were because of global warming or because the winds that moved the ice around were showing modifications.

Understandably, the development met with disappointment in the weather research fraternity. Another ESA spokesman, Volker Liebeg said, "This is a tragedy for all the scientists who have spent years putting together this mission."

"It is a very sad event for many scientists around Europe and also for the teams involved in industry which built the satellite," said Duncan Wingham, the chief scientist of CryoSat. Wingham, a scientist from the Natural Environment Research Council's center for polar observation and modeling in Swindon, had designed the satellite. "It seems fairly clear that the second stage of the rocket failed and didn't make it into orbit and came back down. It has not been a good night. A thousand man years of work and 90 million pounds have gone into it," he added. According to Wingham, now it might take another few years to launch a similar satellite. ❑

U.S. Denies Sabotage of European Ice Mission

WASHINGTON, D.C. (AMP), 10 October 2005—The Pentagon today denied accusations that it was responsible for the loss of Europe's CryoSat ice rocket, which fell into sea shortly after Saturday's blast-off.

The rocket was designed to orbit both Antarctica and the Arctic Sea in order to give scientists a definitive picture of the rate of thinning in the ice and improve computer models of climate change.

Conspiracy buffs speculate that the U.S. fears exposure of its secret dig in Antarctica near Lake Vostok. The dig has been mythologized across the Web, talk radio and the *New York Times* bestselling novel *Raising Atlantis*, but it has yet to be confirmed by the United Nations, Russians or mainstream media. ❑

Greenland Ice Cap Thickens Slightly Despite Warming

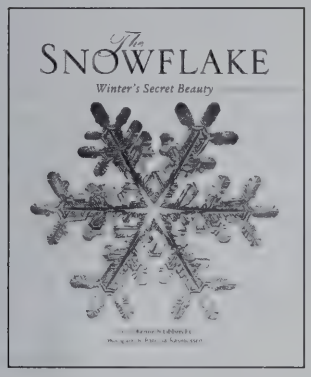
***Reuters*, OSLO, 20 October 2005**—Greenland's ice-cap has thickened slightly in recent years despite wide predictions of a thaw triggered by global warming, a team of scientists said on Thursday. The 3,000-metre (9,842-feet) thick ice-cap is a key concern in debates about climate change because a total melt would raise world sea levels by about 7 metres. And a runaway thaw might slow the Gulf Stream that keeps the North Atlantic region warm. But satellite measurements showed that more snowfall was falling and thickening the ice-cap, especially at high altitudes, according to the report in the journal *Science*.

Glaciers at sea level have been retreating fast because of a warming climate, making many other scientists believe the entire ice-cap was thinning. "The overall ice thickness changes are...approximately plus 5 cm (1.9 inches) a year or 54 cm (21.26 inches) over 11 years," according to the experts at Norwegian, Russian and U.S. institutes led by Ola Johannessen at the Mohn Sverdrup centre for Global Ocean Studies and Operational Oceanography in Norway. However, they said that the thickening seemed consistent with theories of global warming, blamed by most experts on a build-up of heat-trapping gases from burning fossil fuels in power plants, factories and cars. Warmer air, even if it is still below freezing, can carry more moisture. That extra moisture falls as snow below 0°C (32°F). And the scientists said that the thickening of the ice-cap might be offset by a melting of glaciers around the fringes of Greenland. Satellite data was not good enough to measure the melt nearer sea level.

Ice Sheets

Most models of global warming indicate that the Greenland ice might melt within thousands of years if warming continues. Oceans would rise by about 70 metres if the far bigger ice-cap on Antarctica melted along with Greenland. Antarctica's vast size acts as a deep freeze likely to slow any melt of the southern continent. The panel that advises the United Nations has predicted that global sea levels might rise by almost a metre by 2100 because of a warming climate. Such a rise would swamp low-lying Pacific islands and warming could trigger more hurricanes, droughts, spread deserts and drive thousands of species to extinction. Still, a separate study in Science on Thursday said sea levels were probably rising slightly because of a melt of ice sheets. "Ice sheets now appear to be contributing modestly to sea level rise because warming has increased mass loss from coastal areas more than warming has increased mass gain from enhanced snowfall in cold central regions," it said. "Greenland presently makes the largest contribution to sea level rise," according to the report by scientists led by Richard Alley of Pennsylvania State University in the United States. ❑

Book Reviews



Minute but Magnificent

Anyone who appreciates the handsome, intricate symmetry of snow crystals must buy Kenneth Libbrecht's book *The Snowflake: Winter's Secret Beauty* (Voyageur Press, 2003, 112pp, $20). Along with some 200 color photographs of beautiful examples, the book offers detailed explanations of their formation and a fascinating look at the colorful history of snowflake study.

Libbrecht, head of the physics department at Caltech, has published work on a range of topics, including the mechanics of crystal growth. He revels in sharing interesting and often-surprising facts about snowflakes, which he calls "temporary works of art." The first myth that Libbrecht corrects is that snow is made from frozen water. Not true: a snowflake forms when water vapor condenses directly into solid ice. Due to the structure of water molecules, snow crystals usually have six branches, sometimes three, but never eight. "Just as the colors of the stars reveal their composition," he adds, "the shapes of snow crystals tell a tale of how they were created."

In a chapter titled "Field Guide to Falling Snow," he describes many forms, from the smallest crystals, known as "diamond dust," to stellar dendrites, sectored plates, hollow columns, split stars, arrowhead crystals, needles and bullets.

Libbrecht's enthusiasm for his subject comes through on every page, and he advocates a new winter sport, suggesting that those of us fortunate enough to live in wintry climes carry pocket magnifiers in our coats, because "each snowfall provides a unique exhibit of winter art" that "deserves an audience." He even imagines a crowd of spectators surrounding you on the ski slope, "waiting for a turn to use your lens"!

The author also chronicles the work of his predecessors in the field of "flaky" research. German scientist Johannes Kepler examined the symmetry of snow crystals in his 1611 treatise, "The Six-Cornered Snowflake," while French philosopher and mathematician René Descartes wrote the first detailed account of snow-crystal structure in 1637. English scientist Robert Hooke made the first observations of snow crystals using a microscope, and published the resulting drawings in *Micrographia* in 1665.

During a winter voyage through the Arctic, British explorer William Scoresby made the first drawings that accurately depicted many details of snow-crystal form, later publishing them in his 1820 book, *An Account of the Arctic Regions with a History and Description of the Northern Whale-Fishery*.

Vermont farmer Wilson Bentley "awakened the world to the hidden wonders of snowflakes," Libbrecht tells us, by mating his microscope to a camera and first photographing a snow crystal in 1885. Snowflake photography became Bentley's passion, and over the course of the next half-century, he captured—on glass photographic plates—more than 5,000 images, which appeared in countless publications.

Japanese physicist Ukichiro Nakaya created the world's first synthetic snow crystals in his lab at the University of Hokkaido during the 1930s. Although trained in nuclear physics, Nakaya was unable to find a research position matching his training, and the University of Hokkaido had no facilities for nuclear research. Inspired by Bentley's photographs, however, he turned to snow-crystal study instead. Nakaya eventually published detailed work on the morphology of snow crystals, determining the precise effects of temperature and humidity on structure.

Photographer Patricia Rasmussen—whose work illustrates this book—grew up in Wisconsin, where "snow isn't just a season, it's an occupation," as Sinclair Lewis put it. She, too, was inspired by Bentley, and soon after coming upon his 1931 book *Snow Crystals*, which contains 2,453 black-and-white photographs of snowflakes, frost, rime, glaze, sleet, dew and graupel, Rasmussen decided to try her hand at this specialized photography herself. Working with a super-high-resolution photomicroscopy apparatus designed and built by Libbrecht, she has captured intricate details of many six-sided wonders.

Libbrecht also wrote *The Little Book of Snowflakes* (Voyageur, 2004, 96pp, $7.95), a smaller gift-type book containing 150 of his own beautiful color photographs, accompanied by appropriate quotes, such as Henry David Thoreau's 1856 musing on snowflakes: "How full of the creative genius is the air in which these are generated! I should hardly admire more if real stars fell and lodged on my coat."

Both books are available on Libbrecht's terrific web site, www.snowcrystals.com, which also includes information and research about snowflakes. Among the fascinating pages on this web site are those describing the "designer" snowflakes that Libbrecht makes year-round in his laboratory in sunny Southern California as part of his ongoing research into the physics of crystal growth and pattern formation. You can view three generations of lab-grown snowflakes and even watch movies of growing snow crystals. ❑

Review by Jeff Rubin

(REVIEWS CONTINUED ON FOLLOWING PAGE)

Polar Books, Briefly Noted

by John Splettstoesser

***Antarctic Challenges: Historical and Current Perspectives on Otto Nordenskjöld's Antarctic Expedition, 1901-1903*, edited by Aant Elzinga, Torgny Nordin, David Turner and Urban Wråkberg (Swedish Royal Society of Arts and Sciences, 2004, 330 pp, SK400)** includes 22 chapters by 28 authors, representing contributions to a symposium held in Göteborg in 2001 on the occasion of the centenary of Nordenskjöld's expedition of 1901-1903, famous for a number of reasons: valuable information from the northeastern side of Antarctic Peninsula/western Weddell Sea; collection of fossils; an intended overwintering by six men in a hut on Snow Hill Island that turned into two winters as a result of the evacuation ship *Antarctic* becoming beset in ice and sinking; men from the ship making their way to nearby Paulet Island and spending the winter of 1903 there, with the loss of one man; another party of three at Hope Bay, also spending the winter there in 1903 when they were unable to make their way to Snow Hill Island; and an incredible adventure of rescue by the Argentinean ship *Uruguay* of all three separated parties on the same day in November 1903.

This volume, however, concerns itself not with the details of the above, for those are available in numerous publications by Nordenskjöld and several expedition members, but rather insights about some of the members, evaluation of the science resulting from the expedition, the political situation in Sweden at the time, and geopolitics of territorialism and claims in Antarctica. Two chapters are by daughters of Nordenskjöld and Skottsberg, who provided recollections of their early lives with their fathers. Presentations on science include glaciology, physical oceanography, botany, meteorology and climatology, geology, penguin biology, and survival of Antarctic fish at below-freezing temperatures.

A collection of black-and-white photos from expeditionary books and museum collections is included, as well as color photos of a variety of modern scenery and subjects. Several maps printed in the inside covers help with locating geographic names. (For information on purchase, email Jan.Ahman@ub.gu.se) ❑

***Antarctic Mail (from the heroic era when ships were made of wood and men of steel)*, by Dr. Fred Goldberg (privately printed, 2005, 38 pp, $20)** was produced for the occasion of the XXVIII Antarctic Treaty Consultative Meeting held in Stockholm, 6-17 June 2005, by Goldberg, a polar philatelist and historian from Sweden. The book is a collection of philatelic mementos of Antarctic expeditions from the Belgian (1898-99) to the Norwegian-British-Swedish (1949-52). Each page contains replicas of cacheted envelopes, stamps, and photos. The book can be purchased from the author (shipping to the U.S. is $10) at Box 1210, SE-181 24 Lidingö, Sweden, email: Fred@materialdata.se

***Arctic and Antarctic: Journeys to the Extremities of the Earth*, by Urmi Popat (Manas Publications, 2005, 108 pp, $25)** is the personal account of an architect from Mumbai, India who journeys with her parents to Antarctica, Alaska and Scandinavia, including a visit to Jukkasjarvi in northern Sweden, home of the famous Ice Hotel. With more than 100 color photos. (www.manaspublication.com) ❑

Big Dead Place: Inside the Strange & Menacing World of Antarctica

by Nicholas Johnson
Feral House, 2005, 260pp, $16.95

Nicholas Johnson's *Big Dead Place* portrays McMurdo Station as the ultimate company town: Not only can't the workers escape, but the company mistreats them, fires them and ships them out on very short notice—often for the flimsiest of reasons. As one human resources supervisor (identified only as "HR Guy") warns a worker: "You have no rights down here."

In this case, the "company" is Raytheon Polar Services Co., the private contractor that provides logistical support to the U.S. Antarctic Program, known simply as "the Program."

Readers hoping to find tales of modern-day heroism among stoic Antarctic workers or stories of exciting scientific discovery on The Ice will be disappointed by *Big Dead Place*, but the book offers something much more rare: an inside view of the Program from grunt's-eye level.

Johnson spent five summers and two winters in the Program as a DA (dining attendant) and Waste EO (equipment operator), both low-level jobs. The Antarctica he writes about is the American Antarctic bureaucracy that currently reigns both at McMurdo and the South Pole (Palmer is different, he suggests, since it's smaller and personnel arrive and depart by ship). Johnson portrays The Ice as it might be seen in a bawdy version of "Dilbert," the cartoon created by Scott Adams about a beleaguered office drone who suffers countless indignities in an anonymous cubicle that could be any American "worksite" anywhere.

Big Dead Place is a rich, witty and important book—and a searing indictment of the mindless, cover-your-ass bureaucracy of Corporate Antarctica.

Thanks to the corporatization of American Antarctica, many workers no longer feel part of the larger mission—particularly at sprawling McMurdo, with a summertime population exceeding 1,100. Some workers spend an entire year in Antarctica emptying waste containers and recycling bins, or washing dishes, or shuffling papers in a fluorescent box. These people are so remote from the science they support that a chance for them to get out in the field is a rare treat, often obtained only through "connections."

With their six-day, 54-hour workweeks, American Antarctic workers are also victims of the federal government's expediently flexible interpretation of the territorial status of its bases in Antarctica. Although the United States has never made a formal territorial claim over any part of Antarctica—and even if it had, the Antarctic Treaty sets aside all territorial claims—the I.R.S. nevertheless taxes Americans working in Antarctica as if they were at home. Meanwhile, U.S. rules on overtime pay and worker safety in such legislation as the Fair Labor Standards Act and in regulations such as those issued by the Occupational Safety & Health Administration (OSHA) do not cover workers in Antarctica, and in 1993, the U.S. Supreme Court determined (in Sandra Jean Smith v. United States, No. 91-1538) that Antarctica is a "foreign country."

Adding to these burdens are those imposed by constant skirmishing between management and workers, which Johnson sees as "the natural result of a teetering bureaucracy stuffed into a small town of people improvising in an unusual environment":

> The by-the-book mandates of management are eroded daily by the slippery traditions of a shifting mass of seasonal contract workers whose innovation—useful for jerry-rigging an engine or concocting some out-of-stock tool—does not dry up at the end of the work day, when residents sneak work tools to build lofts in their rooms, barter goods between departments (without all the messy paperwork), and find nice warm places to grow marijuana.

The persistent battling becomes so oppressive that the "strange and menacing" aspect of Antarctica in Johnson's subtitle refers not to the continent's punishing weather, but to the work atmosphere at McMurdo, poisoned by a bureaucracy under which workers suffer "daily unpleasantness."

> I have never heard one person say that the most difficult thing about Antarctica is working outside, or being cold. I have never heard one person imply that Antarctica's tough physical environment would be the main reason not to return. I have never heard of one returnee who finally quit because it's the world's highest, driest, coldest, or whatever. People leave because of the bullshit.

Despite the skirmishing, there's never any question of where the true power lies: "Wherever management saw a problem," Johnson writes, "the plane [out] could solve it." Another useful management tool is the end-of-season bonus paid for good behavior, but double-dealing bosses can also cut it, or snatch it away completely, for petty "violations" of murky company regulations—or, apparently, simply out of sheer personal vengeance.

Still, in Johnson's view of Corporate Antarctica as a treacherous, Machiavellian mob of competing professional bureaucrats, the lot of the managers themselves is hardly a happy one, either. The average manager, he tells us, is "far less concerned with the business of managing essential tasks than in staving off the onslaught of accusations and sideswipes that might hinder her progress to the next level."

Johnson has a wonderful eye—and ear—for detail and for odd but revealing scraps of information. And his writing can be vivid: A metal machine brought into a warm building at the South Pole, he writes, "sucks up heat so fast that it emanates cold as a fire emanates heat." He also chronicles McMurdo's social scene, complete with alcohol-fueled antics and furtive couplings in out-of-the-way places, including, allegedly, atop the altar in the Chapel of the Snows.

The book's 58 unconventional photos deserve their own special mention, as they're unlike those in any other Antarctica book. My favorite is a grainy black-and-white photo of physician Leonid I. Rogozov removing his own appendix at Russia's Novolazarevskaya station in 1961. Another shows a tourist enjoying a drink aboard Air New Zealand Flight 901 just before it crashed into Mt. Erebus in 1979, and there are shots of the recovery team documenting and bagging remains of one of the 257 people killed in that disaster. Other photos show McMurdo's scrap wood pile, a close-up of standard-issue "bunny" boots and unwanted treasures collecting in the "skua piles" inside McMurdo dorm entryways.

When Johnson detects pretense, he's swift to puncture it—and his radar is right on. A schoolteacher on an NSF-sponsored visit to Antarctica, for example, insists that he doesn't want to visit the South Pole for *himself*, oh no: "five thousand kids back in Wisconsin need me to go." Johnson also neatly skewers the self-interest of guest-journalists and their portrayals of Antarctica as a pristine wilderness where everyone is a scientist engaged in important research: "If such professionalism is maintained," he writes, "the journalist may be invited back, or even hired to help with NSF Public Relations," as was one former *Washington Post* reporter.

Nothing is spared Johnson's sharp eye, including the government's oft-repeated claim that the primary reason for American involvement in Antarctica is scientific research—not effective occupation of territory as a basis for any claims of sovereignty that the U.S. may one day care to make. But for every grant-funded American scientist on the ice, Johnson points out, there are five wage-earners, most of them involved in building or maintaining infrastructure. As the 11-member United States Antarctic Program External Panel appointed in 1997 wrote, "The U.S.'s scientific and environmental research in Antarctica give substance and relevance to the national presence." In other words, Johnson says, "ironworkers don't support science; science supports ironworkers."

Books such as *Big Dead Place* that give us an unvarnished peek inside the Program are unusual in contemporary Antarctic literature, which now includes a fair number of scientists' memoirs. To complete the picture of modern-day Antarctica, maybe it's time for a supervisor or manager to write a no-holds-barred account of the new Corporate Antarctica. It could be interesting and instructive to hear what it's like trying to manage all of these innovative, improvising individuals. Then again, that could make a dull tale.

The National Science Foundation might also wish to take into consideration the disconnect obviously felt by many workers stuck in the Antarctic bureaucracy and try to build on its current efforts to involve personnel in the scientific mission of the Program. Despite these and any new efforts it makes, however, NSF will always have a hard time counteracting the sheer size of the Program, which necessitates a large number of people playing very ancillary support roles to the primary mission. Besides this, of course, there are naturally a large number of workers who simply have no interest in the mission other than their own paycheck.

A final note: some readers may know Johnson's work from his web site, BigDeadPlace.com, which he wrote under the pseudonym F. Scott Robert. It's a fascinating "no-bullshit" look at working for the Program, and well worth reading along with this title. Though some of the web site's material has been included in the book, most of the book is new. ❑

An Interview with Nicholas Johnson

Big Dead Place author Nicholas Johnson, preparing for a new job in Iraq, answered questions emailed by Antarctic Editor Jeff Rubin.

JR: I'd heard through the grapevine that you were deploying to Antarctica again in late 2005. That's obviously wrong. Why Iraq?

NJ: All employment but that in unusual circumstances now looks to me miserable and unappealing. I'll be a Warehouseman in a camp north of Baghdad. I don't know what that means, but somehow I don't suspect I'll be surprised by the workaday activities of inventory and moving stuff around.

JR: Where do you live now?

NJ: Vancouver, BC. I grew up and lived in the Seattle area most of my life.

JR: Will you go back to the Ice with the Program?

NJ: Sure, I hope so. I love the Ice.

JR: What years were you at which station, and what your job was each time?

NJ: 1998–99 Summer at McMurdo–Dining Attendant (DA); 1999–2000 Summer at McMurdo–Waste Technician (Wastee); 2000–01 Summer-Winter at McMurdo–Waste Equipment Operator; 2001–02 took a year off and wrote the book; 2002–03 Summer at McMurdo–Fleet-Ops Equipment Operator; 2003–04 Summer-Winter at South Pole–Cargo Handler.

JR: What could USAP or Raytheon do to make the work situation better?

NJ: Medical facilities, as well as the entire department of Environmental, Health, and Safety, should be legally divorced from the control of the Prime Support Contractor (presently Raytheon). That the same company responsible for safety statistics and insurance costs also controls employee access to medical care presents a fantastic conflict of interest and causes many problems each season.

NSF should recognize that Raytheon's five-tier "performance-based" bonus system should be changed back to an all-or-nothing bonus system. While those few who receive the larger bonuses will usually disagree, the system favors those in small departments or those working in Science Support positions, and is often used by more unscrupulous supervisors or foremen, especially at small South Pole, to dole out last-minute political punishment to those they simply dislike. In any case, the system is inefficient, makes more work for supervisors, and causes interminable bickering and morale problems. [Myself, I've received one Level 5 and two Level 4s, and have thus benefited from the present system.]

A bonus idea for the health of The Program, not necessarily relating to work life: Artists, writers, and journalists chosen to go to Antarctica should be screened and selected by private organizations, perhaps by a lottery system, at the bill of NSF. Public money funds The Program, so the public should receive information about The Program that is not funneled through NSF.

Above are some of those topics easy to note. Many other issues would be too disparate and detailed, but might fall under topics like "NSF Should Be Ultimately Responsible for the Contractor's Activities" or "Architects Should Consult with Winter-Overs" or "HR Should Be Fired and Replaced By Robots."

JR: Washing dishes or emptying trash cans for a full year in Antarctica, with very few opportunities to get out in the field, must create poor morale. Would it help if all workers had more chances to get out, not just on jollies, but doing real work?

NJ: By any standard, it's painful, impractical, and expensive that every grunt should be flown hither and yonder for "morale" purposes. I believe your suggestion would be popular, but you're asking the wrong guy. Though I've certainly enjoyed the insane beauty that Antarctica offers in every direction and, like anyone, I would appreciate more time in the field, to me it's the routine sameness of place that becomes tiresome, not whether that place is "industrial" or "natural." People out in the field for six weeks are usually excited to visit McMurdo. Too long in Christchurch, and I can't wait to get to McMurdo.

To my mind the stations are a main Antarctic attraction, not something to merely be suffered until one gets a chance to go see a penguin or a nunatak. For example, given only one "morale" flight, I'd choose Vostok over the Dry Valleys. But that's just me. In any case, those who return season after season know more people, thus more field opportunities arise. That's just how it works. Some women have found additional opportunities to experience Antarctica's pristine breath-taking majesty by having sex with beakers [scientists] or helo pilots.

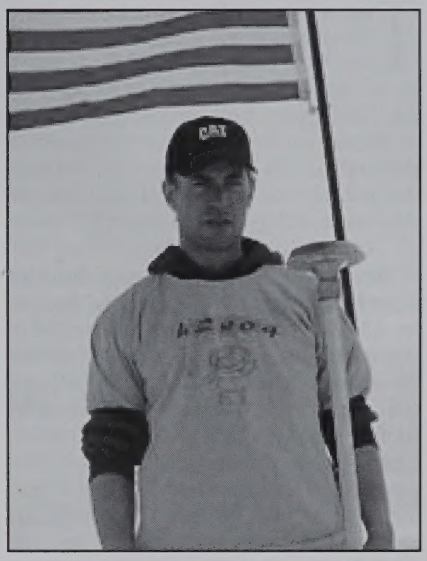
JR: I was fascinated by the photo of the Russian doctor doing his own appendectomy. Where did you get it?

NJ: I flew to Christchurch to write my book on the gamble that the three significant Antarctic libraries there would bring me small treasures unimaginable. I found the photo in a Soviet Antarctic journal in the Canterbury Museum Library. That's also where I found the fascinating journals of Thomas C. Poulter from Byrd's '33-'35 expedition that have not previously been mined to their full potential.

JR: Despite all the bullshit, you spent five summers and two winters in the Program. What did you like about Antarctica? What kept bringing you back?

NJ: Snow on diamond-plating [flooring common to almost every industrial building at McMurdo or Pole]. Broken satellite dishes beside new pizza ovens on the cargo line. Radio chatter where you know the person behind every voice. Having twelve pairs of the same socks, and everyone else has the same socks as you. Beautiful women in oily Carhartts running heavy equipment. The parallel courtesy and ruthlessness that develops between those wintering together, where extravagant pretensions are quickly broken.

In McMurdo, the almost constant sound of the wind making weird noises and rattling the windows; at Pole, watching the slight but steady wind form vast drifts in no time. At a lunch table, conversations that involve a recent romance between a DV and a DA, an account of speaking with crazed Russians on their way out after two years at Vostok, how to use explosives to



Nicholas Johnson, author of *Big Dead Place*

shift an iceberg, or the latest email from Safety saying beware of tripping on rocks in the road. As my friend Jason Anthony once said, "I feel like I would have to boil a year of my interactions with people [in Maine] to get a week of McMurdo conversation."

Working outside all day, and being really cold, makes it easy to appreciate the momentous hurdles of warming a room. Appreciating a warm room brought my appreciation of the icebreaker that made the way for the fuel tanker to juice the power plant and the UTs who maintain the furnaces. Living on the ice made me appreciate simple pleasures in general. Another thing I love about working in Antarctica is that no one carries keys.

JR: Did you get any nastygrams from NSF or Raytheon about the book?

NJ: No. I've even received an unofficial note of support from an NSF manager.

JR: Did you ever see* The Polar Times *while you were working in Antarctica?

NJ: At Pole it usually sat on the window ledges while ironworkers rifled through *People* magazine looking for celebrity [breasts]. If you really want to hone an Antarctic journal for Pole, have a bunch of rugged stories from Pole circa '62, then on the next page have [pornography]. *The Polar Times* certainly has its devotees though, and if it stopped showing up people would be upset. ❑

CORRECTION

The article "APS Member Donates Shackleton Flag" (July 2005 *Polar Times*) incorrectly identified the number of companions who accompanied Ernest Shackleton on his attempt to reach the South Pole during his *Nimrod* expedition. Shackleton had three (not two) companions: Lieut. Jameson Boyd Adams, Nimrod's second-in-command; Eric Marshall, the chief engineer; and Frank Wild of *Discovery* and, eventually, *Endurance*, fame.—**The Editors.**

Letter from the Secretary

This will be my first letter to our member- ship after assuming the role of secretary from Frank Stokes, who has moved on to much greener pastures in Hawaii, poor guy! His eloquent messages and quick wit will be missed, but we know he is still an active member and will no doubt recruit new folks that probably would rather read about Polar Regions while sitting under a palm tree.

✠

You will notice that in this issue there is a ballot for the upcoming presidential election for APS. John Splettstoesser has decided to step down after doing a great job for the last three years. His term was for only two, but circumstances dictated that he continue for another year, which has been greatly appreciated. Please consider the list of candidates carefully and return to me via postal mail so that another member and I can count the votes and see who will continue on. The candidate's credentials are excellent, and no doubt it will be difficult to choose. We know that, regardless of the outcome, all four are extremely qualified to lead APS, and any of us would be happy to have completed just half the accomplishments these candidates have in their careers.

✠

Momentum is continuing to build for the upcoming International Polar Year 2007-2008. Where the last IPY of 1957-58 was centered on upper earth atmosphere, sun, and near earth space studies, international teams of researchers are building collaborations to establish monitoring and study platforms for earth surface and lower and upper atmosphere studies primarily centered on climate change, although not exclusively. As average temperatures have been rising for two decades, and most notably in the polar north, the most outstanding question to answer is the forcing mechanism, natural or anthropogenic, or both. No doubt many of us have our minds made up on this issue either way, but researchers will hopefully bear this out during this extraordinary collaborative effort. The media will also no doubt be all over this one as the pace picks up, but to coin a cliché, stay tuned.

Work has begun for the APS Symposium which is tentatively planned to be the following summer (2007) at the University of Maine campus in Orono. The theme will possibly be the International Polar Year(s). The IPY/IGY of 1957 and 1958 was undoubtedly the beginning of the current era for research in Antarctica, and many of APS members were a part in those observations, either doing the day-to-day logistics of keeping the camps running, navigating or flying the aircraft, piloting the ships, or actually carrying out the studies. It would be a great time to reflect back 50 years to a time of exploration of some relatively unknown frontiers. You all should be proud of how you served, and with any luck we will celebrate that in 2007, I hope as many of you can attend as possible.

Lastly, John thought it would be nice if I mentioned something about where I work, which is the Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire, with offices in Fairbanks and Anchorage, Alaska. CRREL is one of seven labs around the country that conducts research and engineering for the Army Corps of Engineers, which is of course an integral part of the Army. We had our humble beginnings way back with the construction of the Alaska Highway where permafrost was a problem that the military was relatively unfamiliar with, and our lab conducted most of the pioneering work that still is used today with regards to civil projects built on or near permafrost.

The lab is a state-of-the-art facility where we conduct research on topics such as river and sea ice, mobility on snow and ice (vehicle, aircraft, ship), geophysics for crevasse detection and permafrost delineation, seismic acoustic methods, soil revegetation, military training range environmental studies, and extreme environment engineering mainly working for the National Science Foundation in Antarctica. I primarily work for the extreme environment engineering group which has been involved with such projects as the 'white pavement' runway at Pegasus at McMurdo, the new South Pole station, the South Pole tunnel boring machine, and most recently the design for a replacement of the current AGO (automated geophysical observatories) scattered about the continent. The new units will be completely powered by renewable resources and hence will not require the extensive support to resupply the thermal generators with fuel.

We have many connections to projects that most of you might be familiar with, such as the Dew Line, the Dye Sites, Camp Century (the Army's under ice town), and ice coring conducted in Greenland and Antarctica was pioneered by our researchers over 40 years ago. Our library of CRREL reports, and our predecessor lab; Snow Ice Permafrost Research Experiment (SIPRE) group is truly impressive, where basically anything that is of interest with regards to living, working and moving about in polar regions has been studied and put into practice.

I am very lucky to work in such a great place that is a center of expertise for all things in cold regions and I also feel very lucky to serve as your secretary. So if you have any questions about APS that I can help you with please feel free to contact me at the information below. Remember to get those ballots to me by postal mail so we have written documentation of each vote, and we will see you in the next issue. ❑

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Obituaries

Dr. Daniel Payne Hale

The Huntsville Times—Dr. Daniel Payne Hale (June 18, 1926–Nov. 4, 2005) scientist, explorer, conservationist, served in the OSS during World War II and as a NASA scientist from 1961 to 1975 at MSFC/SSL. He was a noted polar explorer who was among the first to winter over in Antarctica in 1957. He studied the aurorae from Ice Station Charlie, a floating ice island near the North Pole. Dr. Hale helped establish the Sipsey Wilderness and explored the deepest vertical cave on Earth. He was elected Fellow of the prestigious Explorers Club in 1966. A memorial service was held in Knoxville. ❑

Ronald C. Taylor

Washington Post, **9 October 2005**—Ronald Charles Taylor, 72, who helped direct funding of cutting-edge research in physical meteorology at the National Science Foundation, died Sept. 29 at Doctors Community Hospital in Lanham after a heart attack.

Dr. Taylor was the foundation's program director of meteorology from 1976 until his retirement in 1997. He gained a reputation for supporting high-risk studies, sometimes outside the traditional world of academia, that led to developments of instrumentations to observe atmospheric electricity.

Dr. Taylor, who lived in College Park, was a native of Port Huron, Mich. He graduated from the University of California at Los Angeles and received a doctorate in meteorology from the University of Hawaii in 1968.

He served as a meteorologist on a team of scientists working for the U.S. Weather Bureau at the Little America IV station in Antarctica in the 1950s.

He also taught at a number of universities, including the University of Maryland, where he was associate professor in meteorology at the Institute of Fluid Dynamics in the mid-1970s.

He was a fellow of the American Meteorological Society and a 1996 recipient of its award for distinguished service to atmospheric sciences.

His marriage to Margaret T. Taylor ended in divorce.

Survivors include his longtime companion, Ming-Ying Wei of College Park; and a son from his marriage, David K. Taylor of Ann Arbor, Mich.

Dr Hale wintered at Byrd Station. Mount Hale is named in his honor. ❑

Greetings from Mid-Coast Maine!

The APS Membership Center has had an excellent year enlisting new members from around the country and world. Many of you have taken advantage of the four-year extended membership rate; some of you have become Life Members; and many of you have taken the opportunity to sign up others with gift and/or introductory memberships. I thank you all. Overall, our membership is more than holding steady, and we are creeping towards the 1200-member mark.

However, having attended other polar-related gatherings within the past year, I have been surprised to learn that the American Polar Society is not as well known by our polar colleagues as I had assumed. When the APS was brought up in discussions with them, many expressed an interest and willingness to join. So I would suggest that if you have polar colleagues out there or people with a polar interest, please consider that they might not be aware of the APS. If they are not, please pass that info along to me and I will contact them. My challenge to you of bringing in one new member for every existing member is still out there, and many of you have wonderfully responded. I say again: The strength of this society is in its membership. Within the past month, I have mailed 549 letters to U.S. members whose memberships expire in 2005. To date, many have replied and signed on with us for 2006. I also sent off 171 letters to members who had yet to renew for 2005 and am gratified that many of these members have also responded, making good on the arrears situation. Foreign members, 36 of them, were also sent renewal letters, as w aring this with you is not to bombard you with membership data, but rather to point out that postage remains one of our largest chunks of spending. That is one reason we encourage members to sign up for multiple years, Life Memberships or now, the four-year extended rate. Please consider these options when it is your time to renew your APS membership.

This year also saw some confusion with the Business Reply Card inserts that outline the different APS membership offerings. We will hopefully provide more clear information about membership beneath this column in every issue of *The Polar Times*. Please remember that the gift and introductory membership rates are available *only* to non-APS members, as an inducement to join. Please contact me if you have any questions, comments, issues, concerns or names of prospective members. I enjoy hearing from you and consider it a privilege to be your membership chairman. ❑

Charles H. Lagerbom
Membership Chair, APS

Membership Rates

Regular Membership Rate
U.S. $15/yr
Foreign $17/yr
Library/Institution $20/yr

Extended 4 Year Membership Rates
U.S. $50
Foreign $56

Life Membership Rates
U.S. $250
Foreign $275

APS Gift Memberships (for non-members)
U.S. ..... $9/1 yr, $17.50/2 yrs
Foreign ..... $10/1 yr, $19/2 yrs

Introductory Memberships (for non-members)
U.S. ..... $10/1 yr, $18.50/2 yrs
Foreign ..... $12/1 yr, $21.50/2 yrs

Institutional Gift Rates (3 years)
U.S. $50
Foreign $59

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Great Looking APS Patch!
Size: 4" x 4"
Cost: $7.50 each or two for $12
Contact Membership Chair to order.

Major Contributors This Issue
Peter Anderson • Billy-Ace Baker
Peter Barretta Jr. • Nathan J. Frank • Abel Shafer

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Purpose of APS

"The purpose of the American Polar Society is to bring together people interested in research and exploration in the Arctic and Antarctic; to preserve the record of polar research and exploration; and to support and encourage research and exploration in polar and polar-like regions. Toward these ends, the Society will collect and disseminate information about polar regions; compile written records, oral histories, maps, photographs, film and video, and electronic information relating to polar regions; aid organizers and members of polar expeditions; and maintain contact with scientists, explorers, research institutions and interested parties." ❑

CORRECTION

Regarding "20-40-60- Years Ago," July 2005 Polar Times—A number of readers zeroed in on the statement in the obituary of Norwegian aviator and polar explorer Hjalmar Riiser-Larsen, which claimed that he led the unsuccessful expedition in 1925 searching for Roald Admundsen, who disappeared in a "balloon" over the Arctic Ocean. Readers correctly noted that Admundsen did not fly in a balloon/dirigible but rather in a French aircraft in search of the *Italia* and Captain Nobile. Admundsen did not return and was never seen again. Okay, okay, your editor takes responsibility for this error, but all should know that the source of this error was the editor of *The London Times*, circa 1965. If he's still around, he owes me a beer! (Oh, and the spelling of the name C.D. Brower, author of *Fifty Years Below Zero*—no "s.")—C.B.

'The *Bear* at the Bay of Whales' by David Abbey Paige